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THE

VETERINARY BULLETIN

Vol. 22] June, 1952 [No. 6

DISEASES CAUSED BY BACTERIA AND FUNGI

BANCOURT, C. (1950). Mammite staphylococcique de la vache. **[Bovine staphylococcal mastitis.]**—*Thesis, Alfort.* pp. 120. **1571**

B. reviewed the aetiology, epidemiology, clinical features and lesions of bovine staphylococcal mastitis, as also its diagnosis, treatment and prophylaxis.—G. P. MARSHALL.

FARKAS, H. (1950). Über den Einfluss von elementarem Brom auf experimentelle Staphylokokkeninfektionen. **[Influence of bromine on experimental staphylococcal infections.]**—*Schweiz. Z. Path. Bakt.* **13,** 243-250. [English, French and Italian summaries. English summary slightly modified.] **1572**

The disinfecting power of aqueous solutions of elementary bromine was tested on lesions produced in rabbits artificially by intradermal injections of *Staph. aureus* without or with the addition of hyaluronidase. Mixtures of bromine with vaseline, talcum powder, and cod-liver oil ointment were tried. These mixtures, when freshly prepared, had a healing effect, but lost their activity on standing. Additional compounds of tetramethylammonium bromide and elementary bromine mixed with talcum powder or cod-liver oil ointment gave good results. The activity lasted longer in these mixtures than that in the mixture containing only elementary bromine.

SAINT-MARTIN, M., CHAREST, G. & DESRANLEAU, J. M. (1951). **Bacteriophage typing in investigations of staphylococcal food-poisoning outbreaks.**—*Canad. J. publ. Hlth.* **42,** 351-358. [Abst. from authors' summary.] **1573**

Staphylococcal food-poisoning is the most common form of food poisoning. No single laboratory test is capable of determining its diagnosis. However, clinical and epidemiological data typical of the illness, and the finding of numerous pathogenic staphylococci contained in the foodstuffs and harboured by food-handlers, constitute strong circumstantial evidence in favour of a diagnosis of staphylococcal poisoning. The use of staphylococcal bacteriophages often permits suggestive correlation of phage-susceptible strains isolated from foods and from food-handlers, and aids health officers in locating the sources of outbreaks and in preventing their recurrence.

Four outbreaks, affecting 146 persons, are described. In three of these, caused by contaminated pastry containing custard, a type 6 staphylococcus was isolated. The fourth resulted from eating ham and potato salad from which a staphylococcus of type 42D was isolated. In each instance, examination of food-handlers resulted in the isolation of *Staph. aureus* of the same type as the one found in the incriminated food.

The authors consider that any food containing pathogenic staphylococci should be considered dangerous for human consumption. As regards food-handlers, any skin lesion, however slight, should be considered a danger in the direct handling of food.

I. GLASER, R. J. & WOOD, W. B., JR. (1951). **Pathogenesis of streptococcal pneumonia in the rat.**—*Arch. Path.* **52,** 244-252. **1574**

II. GLASER, R. J., DAMMIN, G. J. & WOOD, W. B., JR. (1951). **Effect of repeated streptococcal pulmonary infections on the cardiovascular system in rats.**—*Ibid.* 253-259. **1575**

I. The pneumonic lesion induced in albino rats by the intrabronchial inoculation of group A β-haemolytic streptococci was of lobar distribution, characterized by a high incidence of lung abscesses and caused a mortality rate of slightly over 50%. The progressive gross and microscopic changes are described.

II. In rats with pneumonia induced by

NOTE.—*The V.B. references given in square brackets now refer to abstract numbers and not to page numbers.*

multiple inoculations of group A streptococci into the lung, interstitial myocarditis and segmental panarteritis occurred more frequently than in healthy controls or animals subjected to multiple inoculations of pneumococci. None of the lesions resembled the Aschoff bodies of human rheumatic fever.—CLIVE BRIGGS.

GLASER, R. J., BERRY, J. W., LOEB, L. H. & WOOD, W. B, JR. (1951). **The effect of cortisone in streptococcal lymphadenitis and pneumonia.**—*J. Lab. clin. Med.* 38, 363-373. [Authors' summary slightly modified.] **1576**

Cortisone shortens the survival time of mice with cervical adenitis due to group A streptococci. Rats with streptococcal pneumonia were similarly affected by cortisone therapy. The pneumonic lesions in cortisone-treated animals exhibited the following differential features: (a) the edema response was accentuated, (b) the bacterial population of the infected alveoli was often excessive, and (c) the migration of neutrophilic leucocytes into the lesions appeared to be depressed. Although individual variations in these findings were observed, the general differences were relatively consistent. The unfavorable effect of cortisone upon the infection, including the precipitation of early bacteremia, cannot be attributed either to enhancement of streptococcal growth *per se* or to a decrease in the number of circulating polymorphonuclear leucocytes. Systematic histologic studies suggest that the detrimental action of cortisone in acute bacterial disease may be related to an interference with the mobilization of phagocytic cells at the site of infection.

FRIEDLANDER, H. (1951). **Effect of cortisone acetate on an experimental purulent infectious arthritis of white mice.**—*J. infect. Dis.* 89, 26-30. [Author's summary modified.] **1577**

The response in mice to infection with various doses of strain JST of alpha type *Streptococcus* has been found to be highly uniform when measured in terms of mortality plus incidence of arthritis. 5–7 days of treatment with cortisone acetate in doses of 0·015 g. per kg. and above produced statistically significant increases in incidence of mortality plus arthritis produced by this organism in mice, a lowered resistance of the mice possibly being effected by the cortisone acetate.

ROBINSON, M. (1951). **Field observations on the use of acetylarsan and stovarsol in the treatment of swine dysentery.**—*Aust. vet. J.* 27, 132-135. **1578**

Swine dysentery was a major disease in the County of Cumberland, N.S.W., during the wet year of 1949-50. The clinical picture is described and the mortality rate was 20–40% of affected animals.

After treatment of affected animals in the early stages of the disease with stovarsol [a pentavalent arsenical drug] *per os* (8 grains in tablets containing 27·2% arsenic) or acetylarsan [a pentavalent arsenical drug] intramuscularly (3–4 ml. of a solution containing 5·0% arsenic) there were many recoveries. Isolation of affected pigs also seemed to reduce the incidence of the disease.—D. C. BLOOD.

HOWIE, J. W. & CRUICKSHANK, J. (1947). **Effect of shock-producing substances on experimental anthrax infection in mice.**—*J. Path. Bact.* 59, 127-135. **1579**

The authors tested various substances to see if, when inoculated with an anthrax spore suspension intraperitoneally into mice, an increase in mortality occurred. In each experiment three groups of 5–10 mice were used: one was given the test substance alone, one the spore suspension alone and one the mixture. The spore suspension was prepared in bulk, stored in the refrigerator and diluted 1:100,000 with saline for each experiment. In the various experiments mortality following the injection of 0·25 ml. of the diluted suspension varied from none out of five to two out of five, the total mortality over the whole range of experiments being 34 out of 135.

Some samples of fluid from blisters in human beings and of human serum enhanced the lethal effect of the spores. When given in a dose equivalent to 0·075 g. an extract of sterile human muscle had a very marked effect. In all these experiments the mice were unaffected by the injection of the test substance alone.

Following up the results of tests which demonstrated the activity of an aggressin, the authors found that a 0·5% solution of pure formalin in physiological saline was almost as effective in increasing the virulence of the spore suspension, but only when injected at the same site. When the spores were given intraperitoneally in formol-saline of strengths up to 5% injected subcutaneously, there was no increase in the number of deaths. In mice receiving 0·25 ml. of the 5% formol-saline subcutaneously alone there were symptoms of collapse for ten min. after inoculation, but they recovered quickly. Weaker solutions caused no visible reaction.

Normal rabbit serum and a number of other substances did not enhance the virulence of the spore suspension.

Magnesium adenosine triphosphate, the shock-producing substance identified in normal muscle by GREEN *et al.* [*V.B.* **14,** 111-112; **17,** 171] was very active when given with the spores intraperitoneally and appeared to have some enhancing effect when given subcutaneously, the spores being administered intraperitoneally. Hypertonic glucose, which produces dehydration shock, behaved similarly.

These findings appear to support the view that shock-producing substances can enhance the results of infection.—J. RICHARD HUDSON.

MITSCHERLICH, E. (1950). Ein neues Verfahren zur Herstellung einer Anthraxsporenvaccine. **[A new method for preparing anthrax spore vaccine.]**—*Z. InfektKr.* **131,** 657-667. **1580**

To avoid the prolonged interval required for maximal sporulation and for the autolysis of vegetative forms and the continuing risk of air contamination when the flasks are opened, M. devised a method involving the use of meat extract and hay infusion medium in shallow flasks.
—W. R. BETT.

SJOLLEMA, P. & V. D. SCHAAF, A. (1951). Enkele gevallen van massale T.B.C.-infecties bij het rund tengevolge van long-tuberculose bij de verzorgers. **[TB. in cattle caused by infected personnel.]**—*Tijdschr. Diergeneesk.* **76,** 783-791. [English summary.] **1581**

Two cowmen with open pulmonary TB. of the bovine type caused contact infection in cattle, in more than 100 cases and in 42 cases respectively.—C. A. VAN DORSSEN.

PELLEGRINI, D. (1949). Tubercolosi spontanea del mulo da bacillo aviare. **[TB. in a mule caused by avian type organisms.]**—*Profilassi.* **22,** 163-166. [English and French summaries.] **1582**

A description of TB. in a mule in Somaliland, where the disease, even in cattle, is uncommon. There had been ulceration of the left hind pastern, not yielding to treatment. Later, a stringy lymphangitic swelling appeared with firm, non-ulcerating nodules adherent to the skin. Simultaneously the animal lost weight progressively and became cachectic and there was a continuous dry cough. Neither *Histoplasma farciminosum* (*Cryptococcus farciminosus*) nor *Pfeifferella mallei* could be demonstrated. The animal was killed and examined P.M. There was enlargement and suppuration of the regional lymph nodes. Diffuse nodular infiltration was visible in the lungs, the nodules being caseous on section. There were multiple cellular foci of a predominantly epitheloid character, but with an intermingling of lymphocytic cells; fibroblastic and fibrocytic elements were found, but giant cells were rare. Tubercle bacilli of the avian type were isolated from the lesions.—W. TATHAM THOMPSON.

ILLARTEIN, M., SAURAT, P. & VERGE, J. (1948). Recherches sur la tuberculination intracutanée chez les Equidés apparemment indemnes de tuberculose. **[Intracutaneous tuberculin test in horses and mules.]**—*C.R. Acad. Sci., Paris.* **227,** 448-450. **1583**

The incidence of TB. in equine species in abattoirs in Paris from 1936-46 was 0·0132%. In comparative intradermal tuberculin tests on 273 horses and mules, 10·3% reacted to bovine type and 19·8% to avian type tuberculin. The authors concluded that the tuberculin test in horses and mules is of limited value and that further investigation on the subject is required.
—G. V. LAUGIER.

HOLTH, H. (1949). **The tuberculin reaction in the horse.**—*Nord. Vet.-Med.* **1,** 581-600. [In English.] **1584**

Consideration of the available evidence of fallibility of the intracutaneous tuberculin reaction in horses led H. to study tuberculin prepared from cultures grown on a synthetic, protein-free medium. An anatoxin was prepared from bovine type and human type tubercle bacillus cultures in glycerin broth and allowed to stand for 70 days. After filtration of the bacilli 4 parts per thousand formalin was added to the filtrate and the filtrate was used on serum horses and horses of the Veterinary Clinic after it had been tested on g. pigs and on many cattle. Results of comparative tests against standard tuberculin of similar strength were in favour of the anatoxin as a diagnostic agent. There was some discussion in the paper regarding the possible causes of the tuberculin reactions shown by healthy horses.—K. J. SINCLAIR.

HOLTH, H. (1949). **Tuberculosis anatoxin as diagnostic for tuberculosis in cattle.**—*Nord. Vet.-Med.* **1,** 601-612. [In English.] **1585**

The tuberculin test fails occasionally in the diagnosis of TB. in cattle. H. compared his anatoxin [for preparation see preceding abst.] on cattle of a few herds with standard tuberculin. Whilst the results did not differ greatly, H. claimed that the anatoxin had advantages in being easy to prepare, non-irritant and very stable.—K. J. SINCLAIR.

I. ASCOLI, A. (1951). Rôle des bovins dans la prophylaxie spécifique de la tuberculose par le BCG. **[Role of cattle in specific prophylaxis of TB. by B.C.G.]**—*Ann. Inst. Pasteur.* **81,** 139-140. [Only abst given. Abst. from abst.] [See also *V.B.* **21,** 20.] **1586**

II. GERLACH, F. (1951). Critique de l'innocuité et de l'utilité de la vaccination du bétail par le BCG basée sur une expérience de quatorze années. **[Fourteen years experience of B.C.G. vaccination of cattle.]**—*Ibid.* 141. [Only abst. given. Abst. from abst.] **1587**

III. GIRARD, G. (1951). Prémunition antituberculeuse des bovidés par le BCG à Madagascar. **[B.C.G. immunization of cattle in Madagascar.]**—*Ibid.* 141-142. [Only abst. given. Abst. from abst.] **1588**

IV. GIRARD, G. (1951). Prémunition antituberculeuse des porcins par le BCG à Madagascar. **[Immunization of pigs with B.C.G.]**—*Ibid.* 142. [Only abst. given. Abst. from abst.] **1589**

V. HAUTCOEUR, P. (1951). Application systématique de la vaccination par le BCG sur les bovidés d'une ferme d'élevage pendant vingtquatre ans. **[Use of B.C.G. for 24 years on a cattle farm.]**—*Ibid.* 142. [Only abst. given. Abst. from abst.] **1590**

VI. RICHART, A. (1951). Dix-huit années d'application de vaccination antituberculeuse des bovidés par le BCG dans la pratique rurale (1921-1939). **[Eighteen years' experience with B.C.G. on cattle.]**—*Ibid.* 142. [Only abst. given. Abst. from abst.] **1591**

I. Two experiments are described in which calves vaccinated with B.C.G. were allowed close contact with tuberculous cows for a period of ten months. No lesions were demonstrable P.M. in vaccinated calves whilst the majority of unvaccinated controls were tuberculous.

II. It has not been possible, experimentally, to induce B.C.G. organisms to return to their original virulence. Over 10,000 cattle have been vaccinated in Austria and it has been shown that calves can be reared in heavily infected herds. B.C.G. vaccination has made such a favourable impression that it has received official approval in Austria.

III. Between 1928 and 1941 some 4,024 cattle were vaccinated with B.C.G. in Madagascar where TB. is widespread and where it is not possible to segregate calves. Results have been very satisfactory.

IV. TB. in pigs is very widespread in Madagascar. Between 1930 and 1942, 1,800 pigs were vaccinated at birth using doses of 1 mg. subcutaneously. Results have been very satisfactory.

V. A detailed description of a vaccination programme on a farm extending over the period 1924–48. 1,098 calves were vaccinated with B.C.G., followed by annual re-vaccination. Two animals became infected at the beginning of the experiment. Since 1926 no further cases had been recorded.

VI. Two experiments are described on two heavily infected farms: no hygienic precautions were taken. Calves only were vaccinated and they were re-vaccinated annually. Results were very satisfactory.—G. V. LAUGIER.

ESPERSEN, E. (151). **"Streptomycinase."**—*Acta path. microbiol. scand.* **29**, 277-282. [In English. Abst. from author's summary.] **1592**

A study was made of strains of tubercle bacilli resistant to streptomycin to determine whether a streptomycin-inactivating substance—"streptomycinase"—was formed.

No evidence of such action was found.

DRIEUX, H. & THIERRY, P. (1950). La réaction à la résorcine de Vernes et l'immunisation contre la tuberculose des bovins. **[The Vernes resorcin reaction in the immunization of cattle against TB.]**—*C.R. Acad. Sci., Paris.* **230**, 1707-1709. **1593**

Cattle immunized with B.C.G. react to the tuberculin test in the same way as animals with TB., but to the Vernes resorcin reaction they react like animals free from TB.—F. R. HARRIS.

GROSSO, A M., RODRIGUEZ, A. & GABUTTI, F. J. (1949). Aplicacion de la vacuna B.C.G. en anmiales del jardin zoologico de Buenos Aires. **[B.C.G. vaccination of Zoo animals in Buenos Aires.]**—*Gac. vet., B. Aires.* **11**, 249-260. **1594**

TB. is a common cause of death at the Zoo in Buenos Aires in coaties (*Nasua solitaria*), "carpinchos" (*Hydrochoerus hydrochaeris* [capybara (*H. capybara*)], ant-eaters (*Myrmecophaga tridactyla*) and nutria (*Myocastor coypus*).

Since the introduction of B.C.G. vaccination of these species, no cases of TB. have occurred. TB. is rare in pumas (*Puma concolor puma*) and most of those affected appear to recover. As a precaution they also are, however, being inoculated. Contrary to general belief, monkeys do not often contract TB., but one had died of it recently so six contacts had been given B.C.G. and all had remained in good health.—R. MACGREGOR.

DAHLSTRÖM, G. & DIFS, H. (1951). **The efficacy of B.C.G. vaccination. A study on vaccinated and tuberculin negative non-vaccinated conscripts.**—*Acta tuberc. scand.* Suppl. No. 27, pp. 1-133. [In English.] **1595**

Earlier investigations into the efficacy of B.C.G. vaccination are marred by paucity of case-material that is statistically acceptable, and

by lack of satisfactory control series. A study is presented of two comparable groups of 36,235 B.C.G. vaccinated and 25,239 non-vaccinated tuberculin - negative soldiers. An effect of B.C.G. vaccination on primary TB. morbidity can be expected 70–85 days after vaccination. During the follow-up period 58 cases with signs of primary TB. occurred in the B.C.G. group, and 140 in the control group. B.C.G. vaccination reduced the post-primary TB. morbidity in the B.C.G. series compared with the control series, the ratio being 1:2·3 for the follow-up period. Vaccination prevented epidemics in military service as from the time when protection was to be expected. The primary TB. morbidity rate was higher in the B.C.G. vaccinated from rural areas than in those from urban areas; also higher in non-vaccinated negative reactors from rural areas than in those from urban areas. Vaccination should be carried out early enough for protection to have developed before the conscript enters the army.—W. R. Bett.

Fisher, N., Harington, C. & Long, D. A. (1951). **Action of sphingosine and its derivatives on tuberculin sensitivity in guineapigs.** —*Lancet.* **261,** 522-524. **1596**

Sphingosine and N acetylsphingosine emulate cortisone in diminishing allergic tuberculin sensitivity, but are independent of dietary and thyroid influences.—John Seamer.

Lamensans, A., Grabar, P. & Bretey, J. (1951). Fractionnement de la tuberculine purifiée. **[Fractionation of purified tuberculin.]**—*C.R. Acad. Sci., Paris.* **232,** 1967-1969. **1597**

By treatment of purified tuberculin with 90% aqueous phenol and precipitation with alcohol two principal fractions were obtained: one, of a protein nature, possessed all the tuberculin properties; the other, of a polysaccharide nature, acted as an antigen in the specific TB. haemagglutination reaction.—W. R. Bett.

McDougall, J. B. [C.B.E., F.R.C.P. (Edin.)] (1949). **Tuberculosis. A global study in social pathology.** pp. viii + 455. Edinburgh: E. & S. Livingstone Ltd. 32s. 6d **1598**

This book presents a large amount of information on the epidemiology of human tuberculosis.

The book is divided into four parts. The first part gives a factual statement of the mortality and morbidity rates in human beings in many countries of the world and also a short précis of the social and economic position in each country. Some of the statistics are of necessity very incomplete. The second part gives a reasoned summary of prevailing views regarding the various factors which influence mortality and morbidity rates. In this section the influence of such factors as the greater susceptibility of various age periods, the weight of infection, native and acquired resistance, the route of infection and the virulence of the organism are all carefully considered. Other features such as the variation between Eastern and Western civilization and the question of unrestricted migration are also discussed.

Rich is abstracted freely and his quotation ably summarizes this section of the book: "The influence of a given factor is often outweighed and obscured by other factors that act in an opposite direction". It is for this reason that tuberculosis is a subject in which there has always been ample room for argument, but Dr. McDougall rightly points out that it is accurate data and not debate that is required for a successful conquest of tuberculosis.

Part Three of the book gives a critical analysis of a number of factors responsible for the incidence of tuberculosis in a community. The author discusses the extent of the problem in the community, covering such features as mortality and morbidity rates; the environmental factors such as climate, density of population, employment and occupation, the economic position of the people, housing, nutrition and their social life and habits; and the organization of the tuberculosis services, under which heading the question of bovine tuberculosis is considered.

The importance of bovine infection as a cause of both pulmonary and extrapulmonary forms is stressed. In Scotland in 1936 the proportion of extrapulmonary deaths amounted to no less than 25% of deaths from tuberculosis, mostly caused by bovine type infection, by far the greater number of cases occurring in rural areas. These findings have recently been brought to notice once more by Blacklock. The danger of pulmonary tuberculosis in human beings from contact with infected cattle is also mentioned. That there is no evidence to warrant the assumption that the human being possesses a higher degree of native resistance to the bovine type than to the human type tubercle bacillus is supported. Although it is concluded that pasteurization of milk and eradication of bovine tuberculosis help in the tuberculosis problem, no actual statistics are given so that the arguments for and against these methods will presumably still continue to reach "emotional dimensions". In an earlier section, however, the author states that it is no longer believed that universal tuberculization of

the population by random infection is desirable as a means of immunization.

Information on B.C.G. vaccine and its use in the control of tuberculosis is given in Section Three of the book.

The fourth and last section deals with the assessment of the extent and severity of the tuberculosis problem in a community and is a short section on the application of the factors discussed in part three.—J. T. STAMP.

LEVADITI, C., GIRARD, A., VAISMAN, A., RAY, A. & CHAIGNEAU-ERHARD, H. (1951). Traitement de la lèpre murine par le G. 469. **[Treatment of murine leprosy with G. 469 (β-pyridine-aldehyde-thiosemicarbazone).]** —*C.R. Acad. Sci., Paris.* **233**, 113-115. **1599**

Rats infected with murine leprosy were benefited by subcutaneous injections of this drug. Lymph nodes were reduced in size and bacterial content, and liver lesions and the skin reaction at the site of inoculation of the organisms were much reduced.—R. MARSHALL.

NORDÉN, Å. & LINELL, F. (1951). **A new type of pathogenic** *Mycobacterium.* [Correspondence.]—*Nature, Lond.* **168**, 826. **1600**

Acid-fast organisms were isolated from chronic ulcerating skin lesions in human beings. Histologically the lesions resembled tuberculoid granulations. Out of 20 patients examined bacteriologically, cultures were obtained from the lesions of three after incubation at 31°C. A similar organism was isolated from a swimming pool used by some of the patients. The pathogenic properties of the organism were given. The authors considered that it might be a new type of *Mycobacterium.*

—D. LUKE.

SOLTYS, M. A. (1951). **Johne's disease in North-West England.**—*Vet. Rec.* **63**, 492-493. [Author's summary modified.] **1601**

During 1947-50, Johne's bacilli were found on microscopic examination in 328, and their presence was suspected in 146, of 988 faecal samples from cattle, mostly from the North-West Counties and Midlands of England.

MARSH, H. (1952). **Johne's disease in an experimental flock of sheep and its elimination.** —*J. Amer. vet. med. Ass.* **120**, 20-22. [Abst. from author's summary.] **1602**

On one farm M. found that Johne's disease in sheep could be eliminated from the farm by disposing of all the sheep and restocking after keeping the land free from cattle or sheep for a year.

PASHOV, T. B. (1950). **[Epidemiology and diagnosis of Johne's disease in sheep.]**—*Veterinariya, Moscow.* **27**, No. 3. pp. 6-12. **1603**

Investigations were made between 1934–41 in the Ukraine on Johne's disease in sheep. The incidence in affected flocks varied from 3% to 26%. The disease tended to develop from the spring onwards, following the change from housing to pasture. Avian type tuberculin and a johnin spoken of as "Viev" were used for diagnosis.—F.A.A.

PUISSÉGUR, J. A. (1951). Diversas consideraciones y experiencias sobre el Corynebacterium en sus especies diphteriae y ovis. **[*C. ovis* and *C. diphtheriae* in ulcerative lymphangitis of horses.]**—*Gac. vet., B. Aires.* **13**, 111-120. **1604**

This is a general discussion on the control of ulcerative lymphangitis in horses. P. discussed the finding of diphtheria antibodies in the serum of 39·5% of horses examined. He speculated on the potential risk to human beings from horses, and also on the possible value of anti-diphtheria serum for the treatment of ulcerative lymphangitis of horses. He quoted French military statistics for the years 1901–13 to show that the average incidence of diphtheria among cavalry personnel was double the incidence among the infantry, although the death rate was higher in the infantry. He suggested the possibility that diphtheria bacilli of equine origin may be less virulent than those of human origin. He also discussed a theory that diphtheria bacilli may survive on the long hair below the knees and hocks of horses of certain heavy breeds. In tests made on such hair the organism could not be demonstrated. He discussed in some detail observations that might to advantage be carried out to test this theory further.—F.E.W.

BIANCHI, M. C. (1949). La réaction des enzymes protéolytiques dans le diagnostic expérimental de la morve. **[Growth of *Pfeifferella mallei* on media prepared with serum of healthy and of infected horses as a test for infection.]**—*Bull. Acad. vét. Fr.* **22**, 416-420. **1605**

When *Pf. mallei* is cultured on slopes of coagulated normal equine serum, the organism flourishes; when the serum is from a glanders case, the growth is less vigorous and the medium is ultimately liquefied. B. tested this reaction on five horses clinically affected with glanders. The results were compared with control sera from one mare, one stallion and one gelding and also with sera of two infected animals which had just been inoculated with mallein in a dose used for testing horses for glanders. The tests were

negative in the controls, positive in the diseased horses. Previous mallein testing did not inhibit the reaction.—L. M. MARKSON.

RADOJČEVIĆ, M. (1951). **[Effect of *Bacillus subtilis* culture and filtrate on *Erysipelothrix rhusiopathiae* cultures.]**—*Vet. Glasnik.* **5,** 405-417. [Abst. from English summary.] **1606**

Broth cultures of *B. subtilis* (Stockholm strain No. 1335 and Belgrade E_1) have no antibiotic effect on *E. rhusiopathiae suis* (strain Vetserum 988).—W. R. BETT.

SAXER, E. (1947). Vergleichende Versuche zur Wertbestimmung von Schweinerotlaufserum an weissen Mäuser und Tauben. **[Testing of swine erysipelas serum on white mice and pigeons.]**—*Schweiz. Z. Path. Bakt.* **10,** 209-218. [English, French and Italian summaries. Abst. from English summary.] **1607**

The comparative titration of swine erysipelas serum in white mice and in pigeons revealed close agreement of the values. The mouse test is preferable for the following reasons: the mouse is much more uniformly susceptible to *E. rhusiopathiae*. The period of observation required for mice is shorter, *i.e.*, 7–8 days, as compared to 21 days when pigeons are used. Pigeons are much more expensive than mice.

NAERLAND, G. (1950). Om listerellose hos småfe (sau og geit). Bidrag til kjennskapet om dens forekomst og utbredelse i Norge. **[Listeriasis in sheep and goats in Norway.]** —*Nord. Vet.-Med.* **2,** 1-18. [In Norwegian. English and German summaries. English summary slightly modified.] **1608**

N. discussed the syndrome of "staggers" in sheep and goats caused by *Coenurus cerebralis* and the similar syndrome of *Erysipelothrix monocytogenes* infection. The former has not been diagnosed in Norway for half a century and is presumably absent from the country. In 1948–49 N. demonstrated *E. monocytogenes* infection in 19 herds of sheep and three herds of goats scattered over large parts of coastal areas of western Norway.

Of two lambs inoculated intravenously with 5 ml. of a 48–hour culture from the brain of a dead lamb, one developed fever and recovered and when it was slaughtered culture from the brain gave negative results; the other died in three days and the organism was recovered in pure culture from the brain and from other organs. Another lamb inoculated with 10 ml. of 48–hour culture from another case was killed *in extremis*. The organism was isolated from the brain only.—F.E.W.

DJAENOEDIN, R. & NAPITUPULU, B. (1951). Tentang berdjangkit dan mendjalarnja penjakit septichaemia haemorrhagica di daerah jang belum pernah tertimpah atau sudah lama penjakit tersebut tida diketemukan. **[Haemorrhagic septicaemia among livestock in North Tapanuli (Sumatra).]**—*Hemera Zoa.* **58,** 415-420. [Abst. from English summary.] **1609**

A general account of an outbreak of haemorrhagic septicaemia in buffaloes, cattle and pigs in Sumatra.

BALTAZARD, M. & CHAMSEDDINE, M. (1950). Sur la peste inapparente des rongeurs sauvages. **[Latent plague in wild rodents.]**—*C.R. Acad. Sci., Paris.* **231,** 731-733. **1610**

Of 37 gerbils (*Meriones persicus?*) examined in an area in Persian Kurdistan where plague is enzootic among wild rodents eight animals were found dead in their burrows, seven of them having typical lesions of plague. Of the remaining 29 captured alive, eight died within 12 hours, three having typical lesions. In one which was killed when it had symptoms four days after capture no organisms were demonstrable by microscopic examination or culture but a g. pig inoculated with material from the liver and spleen developed plague. Material from the 20 survivors killed at intervals of 23–53 days after capture was examined culturally and by inoculation into g. pigs and one animal yielded *Pasteurella septica* by g. pig inoculation although cultures were sterile. This animal was killed 47 days after capture and had had no symptoms. It is thus possible for apparently healthy animals, some weeks after removal from a source of infection, to carry the plague bacillus as a latent infection.

—E. G. WHITE.

AMIES, C R. (1951). **The envelope substance of *Pasteurella pestis*.**—*Brit. J. exp. Path.* **32,** 259-273. [Author's summary slightly modified.] **1611**

The so-called envelope of *Past. pestis* is nothing more than a particularly well-developed bacterial capsule. This conclusion was reached by studying the capsule in wet Indian ink preparations illuminated by a dark-field condenser (Rowland's method).

The capsular substance can be removed from the cells by certain aqueous solvents such as potassium thiocyanate. The one important immunogenic antigen of *Past. pestis* is thus obtained in a soluble form, and it can be concentrated and purified by the usual physicochemical methods.

The final product appears to be a simple protein. It is strongly antigenic, a few micrograms being sufficient to induce a high level of immunity in experimental animals. The chemical characterization of the purified antigen has, however, not yet been determined, and until this is done no claims can be made regarding the degree of purity achieved.

The capsules of the pneumococcus and *Str. pneumoniae*, which are composed of polysaccharide, are not soluble in potassium thiocyanate, whereas the polypeptide capsule of *B. mycoides* can be extracted by this method.

The methods employed hold promise of wider application in the field of immunochemistry and bacterial technology.

KESSENS, B. H. (1949). Immunisatie tegen coryza infectiosa gallinarum lange incubatie. Immunisatieproeven met neusexudaat. **[Immunization tests with nasal exudate against coryza infection in fowls.]**—*Tijdschr. Diergeneesk.* **74,** 602-605. **1612**

Attempts were made to immunize against coryza of fowls of slow onset. Five cockerels were injected subcutaneously and five others intraperitoneally with 2 ml. of a 25% saline solution of nasal exudate. After a month they were given infective doses intranasally along with eight controls. None of the vaccinated cockerels contracted coryza, whereas controls all became infected. Vaccination with exudate into the bursa cloacae and into skin follicles was not useful. Nor was intravenous injection with phenolized exudate.—C. A. VAN DORSSEN.

CANESSA, S. (1950). Su di una frequente malattia infettiva sporadica dei suini del Modenese. **[A sporadic infectious disease of swine in the Modena district.]**—*Nuova Vet.* **26,** 286-288. **1613**

C. ascribed a fulminating condition characterized by symptoms of colic without hyperthermia to infection with *Bact. coli.*

—J. T. DONE.

SIMMONS, G. C. (1951). **Salmonellosis in domestic animals and birds in Queensland. Observations from August, 1949, to December, 1950.**—*Aust. vet. J.* **27,** 296-302. **1614**

Seventy-three outbreaks of salmonellosis, which occurred in fowls, ducks, pigs, sheep, dogs, cattle, horses and g. pigs are recorded. Sixteen different species of *Salmonella* were isolated. Ten of the outbreaks occurred in sheep, two involved horses and two were in dogs.

—D. F. STEWART.

MONTEVERDE, J. J. & GARBERS, G. V. (1950). Infecciones debidas a Salmonella abortivo-equina. Segunda parte.—Piosepticemia de los potrillos. **[Infections due to *Salmonella abortus-equi*. II. Pyosepticaemia in foals.]**—*Rev. Med. vet., B. Aires.* **32,** 45-68. [English and German summaries. For part I, see *V.B.* **21,** 3481.] **1615**

During an outbreak of equine infectious abortion due to *S. abortus-equi*, pyosepticaemia and polyarthritis occurred in new-born foals. Control measures are described.

—G. P. MARSHALL.

BUTTIAUX, R., GAUMONT, R. & MOREL, P. (1951). *Salmonella* dans les ganglions mésentériques de porcs. **[*Salmonella* spp. in the mesenteric lymph nodes of pigs.]**—*Ann. Inst. Pasteur.* **81,** 236-238. **1616**

Six out of 147 mesenteric lymph nodes from apparently healthy pigs yielded cultures of *Salmonella* organisms, comprising three strains of *S. bareilly*, two of *S. typhi-murium* and one of *S. newport*.—D. LUKE.

KRANEVELD, F. C., ERBER, M. & MANSJOER, M. (1951). Salmonella-dragers onder klinisch gezonde varkens op Java. Tevens een onderzoek over de aërobe bacterie-flora der mesenteriale lymphklieren bij deze dieren. **[Healthy pigs as *Salmonella* carriers in Java. The aerobic bacterial flora of the mesenteric lymph nodes.]**—*Hemera Zoa.* **58,** 48-73. [English, French and German summaries.] **1617**

Salmonella were isolated from 25 out of 150 normal pigs from six farms in Indonesia. Of 400 cultures from single colonies of the primary cultures, 46 proved to be *S. typhi-murium*, 20 *S. heidelberg*, two *S. paratyphi B*, 74 *S. newport*, 14 *S. dublin*, 152 *S. meleagridis*, 11 *S. newington* and seven *S. anatum*. In many cases several types were cultured from the same pig. *S. meleagridis* was present in 22 pigs, *S. typhi-murium* in 12 and *S. dublin* in 10.

Details were given of other bacteria isolated.

—C. A. VAN DORSSEN.

SCHOENE, W. (1951). Agglutininbildung bei Hühnern mit abgetöteten Pullorumbakterien. **[The agglutination test in fowls injected with killed *Salmonella pullorum*.]**—*Exp. Vet.-Med.* **3,** 27-33. **1618**

Inoculation into the breast muscles of 14 fowls of suspensions of killed *S. pullorum* produced a steep rise in agglutinins after 2–3 weeks which declined more rapidly in cockerels than in hens. Young birds (six months old) gave less response than adults (two years old).

—E. G. WHITE.

KONDYURIN, N. G., OSKOLKOVA, G. M. & FROLOVA, G. F. (1950). **[Biochemical and serological properties of indigenous strains of salmonella organisms.]**—*Veterinariya, Moscow.* **27,** No. 1. pp. 51-55. **1619**

A note on the results of the examination of eight strains of salmonella from calves and four from pigs. Two of the calf strains had the biochemical character of *S. enteritidis,* three of *S. dublin* and three did not agree with either. All had the antigenic formula of *S. dublin.* Of the four pig strains one had the antigenic character of *S. virchow,* two were *S. choleraesuis* and the fourth, *S. kunzendorf.*—F.A.A.

I. BATSON, H. C., LANDY, M. & BROWN, M. (1950). **Determination of differences in virulence of strains of Salmonella typhosa.**—*J. exp. Med.* **91,** 219-229. **1620**

II. BATSON, H. C., LANDY, M. & BROWN, M. (1950). **The virulence and immunogenicity of strains derived from Salmonella typhosa 58 (Panama carrier).**—*Ibid.* 231-243. [Authors' summaries copied *verbatim.*] **1621**

I. An investigation is reported of a comparison by three methods of the degree and certainty of differentiation of strains of *S. typhosa* of different virulence for mice. These methods were (a) intracerebral injection, (b) intraperitoneal injection of saline suspensions, and (c) intraperitoneal injection of mucin suspensions of the test organisms. With the strains of *S. typhosa* employed, differentiation was questionable by the intracerebral method, somewhat more marked by the intraperitoneal-saline suspension method, and most definite by the intraperitoneal-mucin suspension method.

Differentiation of the strains employed was found to be independent of the presence or absence of Vi antigen and apparently was more dependent upon the method of testing than upon any known differences in biological characteristics of the organisms.

II. An investigation of the immunogenicity of vaccines prepared from closely related virulent and avirulent strains of *S. typhosa* is reported.

No evidence was obtained of any essential relationship between the virulence of the strains employed and their immunogenicity, as determined by active-immunity mouse-protection tests and by the agglutinin and mouse-protective antibody response in human beings.

STABLEFORTH, A. W. (1949). **Bovine contagious abortion (Bang's disease or brucellosis).**—*F.A.O. Agric. Studies.* No. 10, pp. 83-111. **1622**

S. describes at length the present position regarding brucellosis. Control measures both by vaccination and by the elimination of reactors to the agglutination test are discussed. Official attempts to control the disease in many countries are described. The use of Strain 19 vaccine is described in some detail.

—E. J. H. FORD.

BOHÓRQUEZ, J. J. (1950). Diagnóstico bacteriológico de la Brucella abortus. **[Bacteriological diagnosis of *Brucella abortus* infection.]**—*Rev. med. Vet. Zootec. Bogotá.* **19,** 217-234. **1623**

B. reported that for over 20 years *Brucella abortus* had never been isolated in his Institute, although material from suspected cases had frequently been sown on the appropriate media. In 1949, however, the organism was isolated for the first time from three separate bovine foetuses. He gave an account of the serological tests made and of the pathology of visceral organs of these foetuses.

BRAUN, W., GORELICK, A. N., KRAFT, M. & MEAD, D. D. (1951). **Studies on the *in vivo* fate of brucella variants with different virulence.**—*J. infect. Dis.* **89,** 286-295. **1624**

Large doses of a mucoid variant of *Br. suis* were injected into g. pigs one week or five weeks after inoculation with a smooth strain and the relative numbers and distribution of the two strains in the tissues were studied in animals killed 1–6 weeks later. The less virulent mucoid variant disappeared rapidly, except from localized abscesses. The colonial characters of the two variants enabled them to be used as "markers".—E. G. WHITE.

ARZ, M. A. (1951). Untersuchungen über das Vorkommen der Bruzella-Melitensis Infektion bei Ziegen im Saarland. **[*Brucella melitensis* infection in goats in the Saar.]**—*Inaug. Diss., Munich.* pp. 26. **1625**

Serological examination of goats from eight localities in the Saar failed to produce evidence of *Br. melitensis* infection.—G. P. MARSHALL.

HOFMANN, W. (1951). Die Brucellosen als Berufskrankheit für den Tierarzt. **[Brucella infection as an occupational disease of veterinarians.]**—*Schweiz. Arch. Tierheilk.* **93,** 320-326. [English, French and Italian summaries.] **1626**

Influenza-like primary symptoms are followed by the picture of a general acute infection, which may disappear or become chronic with lesions in the spleen, liver, bone marrow, joints, tendon sheaths, bursae, skin and central and peripheral nervous systems.

Treatment with aureomycin, chloromycetin and terramycin is promising. Prophylaxis was discussed.—W. STECK.

RENOUX, G. (1950). Anticorps bloquants dans le sérum de sujets brucelliques. I.—Leur mise en évidence. **[Blocking antibodies in serum of cases of brucellosis.]**—*Ann. Inst. Pasteur.* **78,** 798-800. **1627**

The sera of some persons who have had a brucella infection do not agglutinate a brucella suspension; blocking antibodies can be demonstrated in these sera. If, however, an agglutinating antiserum is added to a mixture of patient's serum and a brucella suspension yielding an apparently negative reaction, the agglutinating property of the antiserum is completely inhibited by the patient's serum. No serum other than from a patient with a brucella infection has this inhibitory effect. Even in these blocking sera actively agglutinating antibodies are present and can be demonstrated if saline is replaced by normal serum as a suspending fluid.

—A. MAYR-HARTING.

BRAUDE, A. I. & SPINK, W. W. (1951). **Studies in the pathology and pathogenesis of experimental brucellosis. III. Investigations pertaining to the function of the spleen.**—*J. infect. Dis.* **89,** 272-276. [Authors' summary copied *verbatim.*] **1628**

The observation that splenomegaly was associated with good defense against brucella led to an investigation of the function of the spleen in experimental brucellosis.

The spleen was not found to be essential for defense against brucella, as the reticuloendothelial elements in other organs can compensate for the loss of that tissue in splenectomized mice. However, the spleen appears to offer a considerable degree of protection to the liver against invasion by brucella.

The only demonstrable cause for enlargement of the spleen in experimental brucellosis was invasion of that organ by brucella.

NELSON, E. L. & PICKETT, M. J. (1951). **The recovery of L forms of brucella and their relation to brucella phage.**—*J. infect. Dis.* **89,** 226-232. [Authors' summary modified.] **1629**

L forms of brucella have been recovered from blood and from cultures of smooth brucella subjected to the action of brucella phage.

An antigenic as well as a phage relationship exists between the L form and smooth brucella, the L form giving positive precipitin reactions with anti-smooth brucella serum.

The possible role of this form and brucella phage in the epidemiology of brucellosis was discussed.

I. KYGER, E. R., JR. & HADEN, R. L. (1948). **Brucellosis and multiple sclerosis. Cutaneous reactions to brucella antigens.**—*Amer. J. med. Sci.* **216,** 689-693. [Authors' summary copied *verbatim.*] **1630**

II. SPICKNALL, C. G., KURLAND, L. T., CARLE, B. N. & TERRY, L. L. (1950). **Relation of brucellosis and multiple sclerosis.]**—*J. Amer. med. Ass.* **143,** 1470-1473. [Authors' conclusions copied *verbatim.*] **1631**

III. EISELE, C. W., MCCULLOUGH, N. B. & BEAL, G. A. (1950). **Brucellosis and multiple sclerosis.**—*Ibid.* 1473-1474. [Authors' summary and conclusions copied *verbatim.*] **1632**

I. A high degree of cutaneous reactivity to brucella antigens has been found in a group of patients with multiple [disseminated—Ed. *V.B.*] sclerosis.

The known pathologic features and geographic distribution of multiple sclerosis and brucellosis are not incompatible with some relationship.

The possibility of a connection between these two diseases warrants further investigation.

II. The evidence presented here fails to support the previously suggested impression that there is a strong and consistent relation between brucellosis and multiple [disseminated] sclerosis.

III. No evidence of a relation between brucellosis and multiple [disseminated] sclerosis was found by the use of brucella agglutination tests, opsonocytophagic tests and brucellergen skin tests performed on 52 patients with multiple sclerosis.

MAGOFFIN, R. L. & SPINK, W. W. (1951). **The protection of intracellular brucella against streptomycin alone and in combination with other antibiotics.**—*J. Lab. clin. Med.* **37,** 924-930. [Authors' summary copied *verbatim.*] **1633**

The effect of streptomycin alone and in combination with sulfadiazine, aureomycin, terramycin, and chloramphenicol against intracellular and extracellular brucella was observed in vitro. Protection of the intracellular organisms from the rapid lethal action of streptomycin alone and in conjunction with other antibiotics was observed. No conclusions could be drawn from the results of these experiments as to the possible effect on intracellular brucella of aureomycin, terramycin, and chloramphenicol when used individually.

THIERY, J.-P. (1951). La tularémie. **[Tularaemia.]**—*Bull. Off. internat. Epiz.* **36**, 151-155. [English summary.] **1634**

Since 1946 tularaemia has been diagnosed in France in man, in hares and in a few other animals, but not in rabbits. As dogs can be infected, they should not be employed in the hunting of hares in affected districts.

—A. MAYR-HARTING.

VAN DER HOEDEN, J. (1951). La leptospirose bovine. **[Bovine leptospirosis.]**—*Bull. Off. internat. Epiz.* **36**, 400-409. [English summary.] **1635**

The disease in cattle causes serious losses in Israel and produces a syndrome similar to that described in Russia. The causal organism, *L. bovis*, is also responsible for cases of the disease in man; the rodent, *Microtus guentheri*, is thought to be an important reservoir of infection and to have caused widespread infections among agricultural workers during 1949-50.

—E. G. WHITE.

GSELL, O. (1951). Les leptospiroses des animaux domestiques: les leptospiroses des porcs, des chevaux et des vaches en Europe centrale. **[Leptospirosis of horses, cattle and pigs in Europe.**—*Bull. Off. internat. Epiz.* **36**, 410-420. [English summary.] **1636**

This is a review of leptospirosis in the pig, horse and ox, with special reference to findings in Switzerland.—E. G. WHITE.

GASPARDIS, D. (1951). Leptospirosi nei suini in Friuli. **[*Leptospira* infection in swine, in Friuli, Italy.]**—*Clin. Vet., Milano.* **74**, 289-300. **1637**

Of sera from 112 pigs 67·8% yielded positive agglutination reactions with *L. icterohaemorrhagiae* and 13·3% with *L. pomona*.

—J. T. DONE.

STEIGNER, K. FR. (1950). Serologische Untersuchungen über Hundeleptospirose im Gebiet von Hannover. **[Serological studies on leptospirosis in dogs in the Hanover district.]**—*Zbl. Bakt. I. (Orig.)* **156**, 216-219. **1638**

Agglutination lysis tests were made on 735 dogs during the period March 1949–50. Among 228 dogs from a serum-producing organization 11 reacted to *L. canicola* and 15 to *L. grippo-typhosa* at titres of 1:500 and over. The corresponding figures for 227 dogs from Hanover city were 101 and 2, respectively. A second group of 290 dogs from the city gave 112 reactors to *L. canicola*, four to *L. grippo-typhosa*, and one each to *L. icterohaemorrhagiae*, *L. sejroe* and *L. pomona*. The results suggest that infection with *L. canicola* exists in over 40% of the city dogs and that *L. icterohaemorrhagiae* infection is rare. The high incidence of *L. grippo-typhosa* in the dogs at the serum factory is attributed to contact with field mice which were present in large numbers; human cases of "swamp fever" were reported from the same area.

The single case of *L. pomona* infection was confirmed by two serological tests at an interval of four weeks; both were positive to a titre of 1:1,000.—E. G. WHITE.

FREUDIGER, U. (1951). Gibt es ein nervöses Syndrom der Leptospirose (N.S.d.L.) des Hundes? **[Is there a nervous syndrome of *Leptospira* infection in dogs?]**—*Schweiz. Arch. Tierheilk.* **93**, 779-796. [English, French and Italian summaries.] **1639**

Involvement of the nervous system, commonly meningitis, is recognized in human leptospirosis, but has received little attention in dogs. Eight cases are cited which were apparently nervous forms of leptospirosis. F. suggested methods for more exact diagnosis.—ROY MACK.

YAMAMOTO, S. (1951). De la leptospirose chez les animaux domestiques. **[Leptospirosis in domestic animals in Japan.]**—*Bull. Off. internat. Epiz.* **36**, 421-429. [English summary. **1640**

Serological examination of 360 dogs in the Tokio area gave 30 positive reactions to *L. icterohaemorrhagiae* with one of them excreting the organism, and 132 positive to *L. canicola* with 21 shown to be infective. Bovine leptospirosis is widespread in western Japan. In Shizuoka province *L. autumnalis* infection occurs in human beings, spoken of as "autumn plague". Reactions with *L. autumnalis* and *L. hebdomadis* were found in dogs.

—E. G. WHITE.

MARCUSE, K. & KÖNIG, I. (1950). Bakteriologische Befunde bei Jejunitis necroticans. **[Bacteriology of necrotic jejunitis. (*Clostridium welchii*, Type F infection.I]**—*Zbl. Bakt. I. (Orig.)* **156**, 107-118. **1641**

Until 1946–47 it seems that necrotic jejunitis was very rare in human beings; from then it assumed epidemic proportions, especially in Southern Holstein. In the Berlin area there were 150 cases in 1948 and the disease has occasioned much discussion and investigation.

Cl. welchii Type F (*Cl. enterotoxicum*) was isolated by the authors from 31 of 154 specimens from suspected cases and from only one of 500 faecal samples from healthy people. The organism was isolated from 22 of 41 cases diagnosed

clinically and at autopsy. The organism was not isolated from fish, various foodstuffs, sewage or from soil.—E. G. WHITE.

PRÉVOT, A.-R. & HUET, M. (1951). Existence en France du botulisme humain d'origine pisciaire et de "Cl. botulinum" E. [**Botulism in man caused by** *Cl. botulinum* **Type E from ingestion of fish.**—*Bull. Acad. Nat. Méd.* **135,** 432-435. 1642

A family of three who had ingested tinned pilchards developed botulism, the severity of infection varying with the quantity of fish eaten.

The authors cultured the intestinal contents of 163 fresh water fish of eight species and of 13 sea fish (mackerel and pilchards) and obtained 162 anaerobic cultures, 11 of which were toxic. These included six strains of *Cl. welchii,* one of *Cl. sporogenes,* one of *Cl. septicum* and one of *Cl. botulinum,* Type E from a perch. The latter was compared with a type obtained from Canada.—F.E.W.

GORDON, M. A. (1951). **Veterinary mycology and its public health significance.**—*Auburn Vet.* **8,** 14-21 & 24. 1643

The author draws attention to the interrelatedness of human and veterinary mycology and claims that the greatest need in the latter field is good mycology, that is a knowledge of the aetiological agents and their diagnostic characteristics in tissue and in culture. Then follow brief accounts of the salient features of the more important mycoses of animals, including ringworm, sporotrichosis (*Sporotrichum schencki*), epizootic lymphangitis (*Histoplasma farciminosum*), rhinosporidiosis (*Rhinosporidium seeberi*), actinomycosis (*Actinomyces bovis*), aspergillosis (*Aspergillus fumigatus*), moniliasis (*Candida albicans*), histoplasmosis (*H. capsulatum*), and *coccidioidomycosis* (*Coccidioides immitis*) and the review concludes with a bibliography of 73 useful references.

—G. C. AINSWORTH.

RICHOU, L. (1950). Étude sur les teignes des carnivores. [**Ringworm in dogs and cats.**]—*Thesis, Alfort.* pp. 141. 1644

A review of the mycology, pathology and epidemiology of the various types of ringworm in dogs, cats and other carnivores, and of their mode of transmission to man, their diagnosis, treatment and prophylaxis, supported by personal observations in two dogs and one cat.

—G. P. MARSHALL.

SALVIN, S. B. & HOYER, B. H. (1951). **Growth of** *Actinomyces bovis*: **quantitative cultural methods.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 128-130. [Authors' summary modified.] 1645

Cultural methods were described for obtaining concentrated growth of *A. bovis* in a dialyzable liquid medium, growth being determined by quantitative techniques. A special ridged culture tube has been designed for growing the organism in a liquid medium under ordinary atmospheric conditions.

ONEGOV, A. P. (1949). [**Toxicity of hyphomycetes in mouldy clover hay.**]—*Veterinariya, Moscow.* **26,** No. 10. pp. 41- 43. 1646

Haemoglobinuria occurred in horses fed on mouldy clover hay. Cultural examination was made of 32 samples of hay, *Rhizopus nigrans* and some 70 other organisms being obtained, the majority being species of the Genera *Acrostalagmus, Actinomyces, Chaetomium, Fusarium, Penicillium* and *Trichothecium.* Tests for toxicity of certain of these organisms were made on 28 animals—rabbits and g. pigs—by injection, skin application or administration *per os.* Fifteen of the animals died, with a history and appearance of intoxication. Two foals and an adult horse were then given *per os* suspensions of the cultures, but no appreciable illness was produced. The conclusion was drawn that these organisms do not cause the disease, but that they do aggravate the illness caused by an as yet undiscovered factor.—F.A.A.

I. EDDY, A. A., CARROLL, T. C. N., DANBY, C. J. & HINSHELWOOD, C. (1951). **Alkali-metal ions in the metabolism of** *Bact. lactis aerogenes.* **I. Experiments on the uptake of radioactive potassium, rubidium and phosphorus.**—*Proc. roy. Soc.* Ser. B. **138,** 219-228. 1647

II. & III. EDDY, A. A. & HINSHELWOOD, C. (1951). **Alkali-metal ions in the metabolism of** *Bact. lactis aerogenes.* **II. Connexion with viability, growth rate and enzyme activity. III. General discussion of their role and mode of action.**—*Ibid.* 228-237. [Authors' summaries copied *verbatim.*] 1648

I. By the use as tracers of ^{42}K, ^{86}Rb and ^{32}P it has been shown that in the metabolism of *Bact. lactis aerogenes* (a) the alkali-metal ion enters the cell during oxidation of the carbon substrate (glucose, succinic acid, acetic acid), whether or not a nitrogen source is provided, so that growth occurs; in either event the alkali-metal ion subsequently leaves the cell again; (b) if the pH is lowered the maximum uptake of the cation by the functioning cell is raised, although increased hydrion concentration first causes displacement of alkali-metal ions from resting cells; (c) in the early stages of growth, or of glucose oxidation without growth, the flow into the cell

of alkali cations and of phosphate anions takes place in a parallel way.

II. The viability of *Bact. lactis aerogenes* is uninfluenced by deficiency of potassium in the medium. The dehydrogenase activity towards glucose is less affected by an adverse pH when there is sufficient supply than when there is a deficiency of this ion. The deaminase activity towards asparagine or alanine is equally dependent on the pH in both cases.

Maximum growth rates (in a glucose medium) are independent of pH over a range where the glucose dehydrogenase activity drops markedly, but decreases in this latter activity can be to a considerable extent compensated for if the cells are allowed to take up potassium or rubidium ions (as shown by experiments with ^{86}Rb).

Protective response to an adverse pH seems to involve two factors, first, an absorption of alkali-metal ions associated with intermediates in the oxidation of the carbon substrates, and secondly, adaptive changes accompanying growth.

III. The experimental findings described in parts I and II and previous work in the literature lead to certain conclusions about the role of alkali-metal ions in the growth and metabolism of *Bact. lactis aerogenes*.

The view is favoured that the positive alkali-metal ions accompany negative phosphate ions into the cell during metabolism and that potassium or rubidium ions are of a size suitable for incorporation into a structure involving phosphorylated intermediates and enzyme surfaces. As long as a binding of this type persists there can be an automatic displacement of hydrions from the cell, which is therefore to some extent protected against their action. The mechanism, however, by which the cell is able to grow at a rate almost independent of pH over a wide range involves also adaptive changes in the proportions of enzymes.

Franke, W., Lee, L. & Kibat, D. (1949). Zum Stoffwechsel der säurefesten Bakterien. II. Über das Verhalten der ungesättigten Fettsäuren. **[Metabolism of acid-fast bacteria. II. Behaviour of unsaturated fatty acids.]**—*Biochem. Z.* 319, 263-282. **1649**

The effect of a series of unsaturated fatty acids, containing 18 or 22 carbon atoms on the respiration of *Mycobact. rubrum* and *M. phlei* was studied. The structure of the molecule in the case of isomeric acids containing 18 C atoms was discussed; with the number of double bonds in the chain the inhibitory effect increased.

Stearol acid having a triple bond in the C chain has an effect in each case, ricinoleic acid only with *M. rubrum*, the action being much stronger than with oleic acid. The doubly unsaturated α-elaeostearic acid has a less inhibitory action than the isomer linolenic acid. Dehydrogenation by the bacteria probably begins in the vicinity of the carboxyl group not at the double bond. Chaulmoogric acid behaves like oleic acid in similar tests and the hydrogenated acid like stearic acid. The five carbon atom ring in the molecule does not affect the reaction.

—E.M.J.

Anon. (1951). **List of species maintained in the National Collection of Type Cultures.**—*Mem. Med. Res. Coun.* No. 21. (3rd Edit.) pp. 15, London: H.M. Stat. Off. 1s. **1650**

The National Collection of Type Cultures now contains only those bacteria which are of medical or veterinary interest. The organisms are listed alphabetically under the two orders Actinomycetales and Eubacteriales. Bacteriophages are listed separately. Cultures are issued in the form of desiccates.—C.M.S.

Merchant, I. A. [Professor of Veterinary bacteriology and Head of the Department of Veterinary Hygiene, Division of Veterinary Medicine, Iowa State College.] (1950). **Veterinary bacteriology and virology.** pp. viii + 885. Ames, Iowa: The Iowa State College Press. 4th Edit. $8.50. **1651**

This fourth edition of Merchant's textbook for veterinary students, like its predecessors, confines itself to the bacteria and the viruses; the protozoa are purposely omitted on the grounds that they are more logically studied in the course of parasitology. The emphasis is more directly on the organisms themselves rather than on the diseases which they cause. The book is in four parts, namely: The general biology of micro-organisms; Infection, resistance and immunity; Classification and characteristics of pathogenic bacteria, yeasts and moulds; and The filtrable viruses and bacteriophages.

The first two parts give an adequate and up-to-date summary which will meet the needs of the student. The classification faithfully follows that of Bergey; this will raise difficulties for some students who may find organisms placed in classes quite different from those in which they have been accustomed to find them. It was, however, refreshing to find that the author could not follow Bergey in the absurdity of dividing *Erysipelothrix rhusiopathiae* into three separate species namely, *E. rhusiopathiae, E.*

muriseptica and *E. erysipeloidis*. The part dealing with the bacteria, fungi and moulds which also includes the rickettsial infections and diseases caused by the pleuro-pneumonia group of organisms is the best part of the book, particularly the accounts of the diseases which occur in the U.S.A. Minor points which could be criticized are the failure to give separate accounts of the diseases caused in dogs by *Leptospira icterohaemorrhagiae* and *L. canicola*, the separation of ornithosis from psittacosis which arises from acceptance of Bergey's nomenclature for the causal organism, and the failure to give any account of the important disease of goats, namely, caprine contagious pleuro-pneumonia. The reviewer found the section dealing with the viruses the least satisfactory part of the book, partly because the diseases are classified according to Holmes' system as published in Bergey (1948) with its collection of new and unfamiliar names, but also because of the very inadequate accounts given of important virus diseases which do not occur in America.

The attempt to produce a systematic classification of the viruses seems to be premature in the present state of our knowledge and leads to incongruities which will undoubtedly require early alterations and amendments. For example, to place the virus of Rous' sarcoma in a group, all the other members of which cause wart-like growths is surely not justified. Swineherds' disease, now known to be caused by *Leptospira pomona*, is listed in the poliomyelitis group of viruses; ectromelia of mice is placed in the herpes group—surely it would be more appropriately placed in the pox group?

The account of foot and mouth disease is compressed into four pages in which there is no mention of the importance of the complement-fixation test in the typing of the virus and in which it is dogmatically stated that transmission of the disease is complicated by the occurrence of carrier animals which act as reservoirs of the virus. The mass of evidence is against the occurrence of carriers and such a statement should have been supported by adequate evidence or at least some indication that there is a division of opinion on the matter. Rinderpest is allotted two and a half pages in which space it is quite impossible to give the student anything like an adequate description of the disease. For example, the mortality is given as 90% without any mention of the great variations in resistance which occur in different breeds. The list of hosts omits any mention of the important fact that wild ruminants and wart hogs are susceptible and the section on immunization dismisses the goat-adapted vaccine in one and a half lines; this is the most widely used of any of the vaccines and a fuller account ought to have been given. The lapinized vaccine so widely used by the Japanese and which is now being used on a rapidly increasing scale in Africa and Asia is not even mentioned. These omissions are the more surprising since the chick-embryo vaccine which is still in the experimental stage is given six lines. African horse sickness is said to occur only in South Africa, Egypt and Palestine, whereas it is a common and important disease in East Africa. The accounts of bovine malignant catarrh and Teschen disease of pigs are so brief as to be of little value.

In the preface it is stated that the listing of a complete bibliography is not considered to be a necessary function of the book; however, at the end of each chapter lists of references are given. These might be improved; for example, the eleven references given after the chapter on pleuro-pneumonia do not mention the important work done in Australia by Turner and his colleagues, the rinderpest references do not include the work of Edwards in India, and so on. Printing errors which should be corrected in future editions include the misspelling of Onderstepoort as Anderstepoort in five places on page 845.—M.C.

HERRER, A. (1944). Descripcion de una Grahamella del perro, *Grahamella canis* N. sp. **[Description of a *Grahamella* of the dog, *G. canis*.]**—*Rev. med. exp.* [Lima]. **3**, 19-33. [Abst. from abst. in *Biol. Abstr.* Sect. F. **20**, No. 2. pp. 29-30. (1946.)] **1652**

Seventy-five samples of dogs' blood from five different localities in Peru were examined by means of cultures and smears. All the smears were negative, but three samples when cultured on Noguchi's semi-solid medium or on blood agar were found to contain *G. canis*. The infection could be transferred to fresh hosts, a procedure which was facilitated by splenectomy.

—L. P. JOYNER.

See also absts. **1818** (udder catarrh); **1854** (TB.); **1855** (viability of *Salmonella* organisms in milk); **1857** (food poisoning); **1863** (tubercle bacilli in hospital effluents); **1909** (growth of bacteria in fluid media); **1917** (report, Australia); **1918** (report, New Zealand); **1919** (report, India); **1921** (report, Pakistan); **1922** (report, Basutoland); **1923** (report, Nigeria); **1924** (report, Northern Rhodesia); **1925** (report, colonial research); **1927** (report, Bechuanaland); **1928** (report, Nyasaland); **1929** (report, Trinidad & Tobago); **1931** (report, Sweden); **1932-1933** (reports, U.S.A.); **1934-1935** (books, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

GUYAUX, R. (1951). Trypanosamiase latente et vaccination antipestique au moyen de goat virus. **[Latent trypanosomiasis and immunization against rinderpest with goat-virus.]**—*Bull. agric. Congo belge.* **42,** 130-134. **1653**

Ten young cattle, six of which had had trypanosomiasis, received goat virus and the rinderpest vaccination caused the latent trypanosomiasis to reappear.—JAS. G. O'SULLIVAN.

DAVEY, D. G. (1950). **Experiments with "antrycide" in the Sudan and East Africa.**—*Trans. R. Soc. trop. Med. Hyg.* **43,** 583-616. **1654**

D. discussed the tests made during 1948–49 in the veterinary laboratories of Kenya, Uganda and the Sudan, on antrycide. Two salts were used, the chloride and the more soluble methyl sulphate. In small laboratory animals the dose is small and the chloride can be given in solution; but in larger animals it is administered in suspension. The slow absorption of the suspended material produces a prophylactic effect.

In mice the minimum curative dose was 12·5–25, 0·5, 1·0, 2·5–5 and 1–2 mg. per kg. against *T. rhodesiense, T. equiperdum, T. equinum, T. evansi* and *T. congolense* respectively.

The East African and Sudanese experiments were concerned mainly with the control of trypanosomiasis of cattle caused by *T. congolense* and *T. vivax.* More limited experiments on *T. evansi* infection in camels were made in the Sudan.

The minimum, subcutaneous, curative dose in cattle was 2–4 mg. per kg. of the chloride and 1 to more than 2 mg. per kg. of the methyl sulphate against four different strains of *T. congolense,* and about 5 mg. per kg. of both salts against two strains of *T. vivax.* In prophylactic experiments, sixteen cattle were each given 1·5 g. of the methyl sulphate and 1 g. of the chloride. Nearly 15 weeks later, eight were challenged by inoculation and eight by the bites of infected tsetse flies. [Unfortunately D. omitted mention of the species of trypanosome.] Of the former all, except one animal which died of other causes on the 28th day, remained free from trypanosomes for 42 days. Of the latter, seven were free for 42 days: in one, parasites were demonstrable in thick smears on the ninth day.

The main laboratory experiments may be summarized by the statement that 5 mg. per kg. of the chloride protected all the cattle against infection (usually by inoculation) with *T. congolense* and *T. vivax* for 20 weeks. Smaller doses gave shorter protection. Field experiments were also made in fly areas in Uganda and Kenya where both *T. congolense* and *T. vivax* occur. In the Uganda area the strain of *T. vivax* was virulent and three out of ten cattle treated with 2 g. of the methyl sulphate had this parasite in their blood 11 weeks afterwards. One out of ten cattle given 1·5 g. of the chloride had an unidentified trypanosome 12 weeks after injection and exposure. In the Kenya area, 1·5 g. of the methyl sulphate plus 0·5 g. of the chloride protected all of 12 cattle for 12 weeks; 1·5 g. of the methyl sulphate plus 1·0 g. of the chloride protected all of 11 cattle for 13 weeks; 1·5 g. of the methyl sulphate plus 2·0 g. of the chloride protected all of 11 cattle for 12 weeks and after injection of 3 g. of the methyl sulphate alone, one out of ten cattle had *T. vivax* after nine weeks. Protection against *T. congolense* always persisted longer than protection against *T. vivax.*

Relapse strains recovered in the laboratory experiments did not appear to have acquired much resistance to treatment with antrycide; but in the Kenya field experiment, strains of *T. congolense* collected from cattle that developed trypanosomiasis when the effects of the prophylactic dose were wearing off were highly resistant to treatment.

The therapeutic doses have a reasonable margin of safety. For most cattle a subcutaneous dose of 12 mg. per kg. of the methyl sulphate is safe provided that the animals are kept reasonably quiet for 12 hours after inoculation, but a field dose of 5 mg. per kg. is recommended. Evans reported from the Sudan that 200,000 head of cattle were treated with 5 mg. per kg. of the methyl sulphate "with almost entirely satisfactory results, disquiet only arising when calves were being treated". Suspensions of the chloride have negligible toxicity. After the inoculation of 5–10 mg. per kg. a small local swelling may develop; this may become encapsulated, but it does not suppurate or spread.

D. recommends that the methyl sulphate alone should be used for curative purposes. For prophylactic use, 1·5 g. methyl sulphate mixed with 0·5 g. chloride may be given approximately every eight weeks. Since it would, however, appear that the tendency to drug-fastness with *T. vivax* is less than with *T. congolense* and the virulence of *T. vivax* appears to be reduced when treated animals contract infection as protection is waning, experience may show that in practice an inoculation of 1·5 g. methyl sulphate with 2 g. of chloride every 12 weeks may prove satisfactory.—J. RICHARD HUDSON.

THIENPONT. (1951). **Some observation on the use of antrycide in the treatment of cattle trypanosomiasis in Ruanda Urundi.**—*Bur. interafr. Tsetse Tryp.* pp. 10. **1655**

Of 57 cattle treated, there were 17 relapses and seven deaths. Some cases of shock and severe local reaction were recorded. Doses of 5 mg. and 10 mg. of antrycide methyl sulphate as 10% solution in distilled water were injected, preferably subcutaneously into the shoulder.

—R. MARSHALL.

KRAUSS, S. (1949). **The control of dourine in Poland.**—*F.A.O. Agric. Studies.* No. 10 pp. 179-189. **1656**

The introduction of dourine into Poland during the second world war was followed by extension of the disease, especially about the end of the war, when veterinary services became disorganised. The incidence of suspected cases fell from 30,000 in 1946 to 6,000 in 1948 and the measures taken to achieve control are recorded. Briefly, regular clinical inspection of all adult horses, control of breeding, the branding of infected and suspected animals and the regular use of the complement-fixation test in doubtful cases (interpreting negative readings with care) have all been employed. "Infected", "suspected" and "exposed" animals are defined. Infected stallions are castrated and returned to their owners, infected mares are taken by the State and compensation paid. They are slaughtered if unfit, otherwise they are placed in special "isolation points", treated with heavy doses of organic arsenic and antimony compounds, and then worked. Male foals born in isolation are castrated and treated by injection, but female foals are killed.

Clinical symptoms seen have corresponded with textbook descriptions, but not uncommonly an atypical form characterized by temporary depigmentation of skin and partial facial paralysis has been noted.

Artificial insemination in infected areas is recommended but there is no indication of the extent to which it has been used in Poland.

—K. G. TOWERS.

KAPLAN, M. M. (1949). **Lyophilized (freeze-dried) antigen for the complement-fixation test for dourine.**—*F.A.O. Agric. Studies.* No. 10. pp. 189-191. **1657**

K. describes the method used by the U.S. Bureau of Animal Industry for the preparation of dourine antigen. Trypanosomes are obtained from infected white rats by bleeding out at the height of the blood infection. The fluid antigen obtained by re-suspending washed organisms in physiological saline and glycerin solution will normally keep only a few weeks. By freeze-drying the material can be kept for over four years without loss of sensitivity.

—K. G. TOWERS.

NASCIMENTO, C. B. (1949). Pesquisa de lisina para *Trypanosoma equinum* em soro de cobaia, pela prova de Pfeiffer. **[Pfeiffer's test used for detection of *T. equinum* lysin in g. pig serum.]**—*Veterinaria, Brazil.* 3, 61-88. **1658**

A series of experiments was carried out to determine the usefulness of Pfeiffer's lytic test for the detection of *T. equinum* infection. The test animal used was the white mouse. N. was able to demonstrate the presence of lysin in infected g. pig serum diluted 1:10 but not at a dilution of 1:100. Normal g. pig serum occasionally contains a lysin for *T. equinum*. Normal horse serum diluted 1:10 is free from lysin.

The course of *T. equinum* infection in g. pigs was found to vary between 5 and 34 days—much less than has been reported by previous investigators. There was apparently no relation between the temperature curve of g. pigs infected with *T. equinum* and the appearance of the flagellate in their peripheral blood.

—I. W. JENNINGS.

HOOD, M. N. (1945-46). *Trypanosoma equiperdum, Trypanosoma brucei* **and** *Trypanosoma hippicum* **infections in laboratory animals, chick embryos and chickens.**—Thesis, Michigan. **1659**

Infections with *T. equiperdum, T. brucei,* and *T. hippicum* have been produced in white rats, white mice, g. pigs, rabbits, hamsters, cotton rats, and *Peromyscus* mice. The three strains of trypanosomes induced the same general symptoms in each species of the experimental hosts. Serial cultures on chick embryos were highly successful. The growth of the cultures was followed by removing blood samples through cuts made in the shell. Subcultures were carried out on the basis of the findings. Cultures on chick embryos are uniform and easy to duplicate. The same is true of the infection in white rats. H. concludes that this gives two new tools for the determination of the trypanocidal action of chemotherapeutic agents.

—H. L. GILMAN.

HOPPE, J. O. (1945-46). **A study of** *Trypanosoma equiperdum* **infection in the rat, with particular reference to blood sugar, erythrocytes, hemoglobin, platelets, plasma proteins, and cause of death.**—Thesis, Maryland. **1660**

Extensive experiments conducted to re-examine the known data and to investigate further the mechanism by which *T. equiperdum* causes

death in the albino rat. H. concludes that death is caused by the consumption of the blood sugar at a rate in excess of the ability of the rat to furnish glucose sufficient to maintain life. The oral administration of 5 g. of glucose per kg. body weight every three hours, prolonged life an average of 18 hours. One of the characteristic features of the blood picture is a progressive anaemia. Blood platelets are reduced 77·6%. A method of counting platelets has been devised which eliminates the necessity of elaborate precautions to prevent disintegration. The total proteins of the plasma and serum are not affected in the same manner as are the red blood cells, haemoglobin, blood sugar, packed cell volume and platelets. Instead there is a slight increase in the plasma of the proteins throughout the infection to a level above the normal which is just statistically significant while the serum proteins increase up to 48 hours after infection, then decrease continuously to the point of death.—H. L. GILMAN.

ALLEY, J. C. (1951). **Antrycide methyl-sulphate in the treatment of *T. congolense* infection in dogs.**—*Vet. Rec.* **63**, 847-848. **1661**

Doses of 0·5 ml of 10% antrycide methyl sulphate per 15 lb. body weight cured five cases of infection by *Trypanosoma congolense* in pariah dogs, without toxic results.

—F. R. HARRIS.

CHEDID, L. & BOYER, F. (1951). Action du placenta dans l'infection expérimentale de la souris par *Trypanosoma brucei*. **[The placenta in experimental *T. brucei* infection in mice.]**—*C.R. Acad. Sci., Paris.* **233**, 443-444. **1662**

Mouse embryos had a resistance not evidenced by their mothers and which disappeared at birth. Transplanted placentas conferred a certain amount of resistance on both male and female mice.—JAS. G. O'SULLIVAN.

PACKCHANIAN, A. (1950). **Relative immunity of the American forest deer mouse, *Peromyscus leucopus noveboracensis*, against hyperinfection and reinoculations with *Trypanosoma brucei*.**—*Amer. J. trop. Med.* **30**, 17-26. **1663**

The species was very resistant to *T. brucei* infection and is recommended as suitable for cross-immunity experiments.

—JAS. G. O'SULLIVAN.

ROGNONI, G. (1949). Contributo allo studio della trichomoniasi. **[Trichomoniasis research.]**—*Clin. vet., Milano.* **72**, 262-267. **1664**

General observations on the epidemiology, diagnosis and treatment of bovine trichomoniasis.—I. W. JENNINGS.

WILLEMS, R. (1950). Aperçu sur la pathogénie de la trichomoniase bovine. **[The pathogenesis of bovine trichomoniasis.]**—*Bull. Off. internat. Epiz.* **33**, 361-374. **1665**

[See also *V.B.* **21**, 1311-1314, 1316, 1318 and 1320.] W. discussed the presence of the protozoa in spermatic fluid, the possibility of non-venereal transfer, resistance of the organisms outside the body and the pathogenicity in both sexes. Trichomonas does not produce toxins, nor is it responsible for lysis of the foetus. In discussion on this and the previous paper by FLORENT [*V.B.* **21**, 1320] the incidence and cause of pyometra, the virulence of the organism, immunity and certain aspects of pathogenicity were raised. In reply W. said that the exact pathogenic rôle was not yet clear and further work on endocrinology in particular was needed. The virulence of the organism probably varied from country to country.

—JAS. G. O'SULLIVAN.

DIKMANS, G. (1951). **Bovine venereal trichomoniasis: its diagnosis and treatment.**—*N. Amer. Vet.* **32**, 679-688. **1666**

D. recommends plastic pipettes for the collection of preputial samples and considers flushing of the prepuce inadvisable because of the collection of extraneous debris. Topical application of trypaflavine-surfen ointment under subdural anaesthesia is advised for bulls.

—JAS. G. O'SULLIVAN.

PELI. (1950). L'insémination artificielle dans la prophylaxie de la trichomoniase. **[Artificial insemination in prevention of bovine trichomoniass.]**—*Bull. Off. internat. Epiz.* **33**, 427-430. **1667**

Artificial insemination is the main prophylactic against trichomoniasis especially where farms are small and bulls are scarce. Menzani in a written contribution to the discussion said that if bulls could be kept free from trichomoniasis the condition would disappear.

—JAS. G. O'SULLIVAN.

WATANABE, M. (1951). **Trichocidin.**—*Vet. Div., Agric. Coll., Tokyo Univ.* pp. 206-216. **1668**

Trichocidin is an antibiotic principle extracted from cultures of Penicillidae. It has a strong destructive power against *Trichomonas foetus*.

Detailed descriptions of the history of discovery, method of extraction, biochemical properties, and results of its application for the treatment of trichomoniasis are given.

The present trichocidin preparation is too unstable for wider practical use. Its stabilization is being studied.—KOGI SAITO.

ANON. (1949). **Coccidiosis.**—*Ann. N.Y. Acad. Sci.* **52,** 429-624. **1669**

This series of papers is the result of a conference on coccidiosis held by the Section of Biology of the New York Academy of Sciences on March 4th and 5th, 1949. Most of the contributions were submitted voluntarily and therefore may be taken as a fair indication of the aspects at present being studied. From the titles it is evident that most work is being done on *Eimeria tenella* and on the chemotherapy of this infection. Papers on *Eimeria* species in sheep, rabbits, turkeys and quail are also included.

—L. P. JOYNER.

WALETZKY, E. & HUGHES, C. O. (1949). **Factors involved in tests for acquired immunity in *Eimeria tenella* infections of the chicken.**—*Ann. N.Y. Acad. Sci.* **52,** 478-495. **1670**

The relationship between the incidence and duration of pathological changes in the caecum and the infective dose of sporulated oocysts was demonstrated in *E. tenella* infections in chicks. These changes were prolonged by the administration of drugs and it was only when caecal occlusion and thickening caused by the initial infection had subsided, that re-infection could be achieved. It is recommended that in laboratory tests for acquired immunity, either at least a two-week interval should be allowed between the primary infection and the challenge, or that a sample of test birds should be examined to ensure that the initial changes have subsided before re-infecting.

Single severe infections did not prevent the development of caecal lesions on re-infection but the mortality was reduced.

Nitrophenide (presumably m m'dinitrodiphenyl disulphide) did not hinder the development of acquired immunity to caecal coccidiosis when administered in the food for two weeks in doses of 0·075% in moderately severe infections or of 0·02% in relatively light infections.

The economic advantages to be gained from the continuous administration of heavy doses of coccidiocidal drugs to suppress all infections rather than allow immunity to be acquired is discussed.—L. P. JOYNER.

JUNGHERR, E. L. & WINN, J. D. (1949). **Continuous low level sulfaquinoxaline feeding in the practical control of coccidiosis in broilers.**—*Ann. N.Y. Acad. Sci.* **52,** 563-570. [Abst. from authors' summary.] **1671**

Controlled field trials on the effects of the continuous administration of sulfaquinoxaline were carried out. On each of six farms, the birds were divided into two groups, one of which was maintained as a control and the other was continuously treated with 0·01% sulfaquinoxaline in the food.

In the treated groups when compared with the controls there was a lower mortality from coccidiosis, better food utilization and favourable weight gains.

The results of the assay of sulfaquinoxaline in the food by two different laboratories indicated the importance of thorough mixing and sampling and extraction methods.—L. P. JOYNER.

LUND, E. E. (1949). **Considerations in the practical control of intestinal coccidiosis of domestic rabbits.**—*Ann. N.Y. Acad. Sci.* **52,** 611-620. **1672**

Observations on groups of rabbits indicated that under normal conditions of management, naturally occurring coccidial infections rarely gave rise to serious enteric symptoms or weight losses. Nevertheless experimental infections with *E. magna* showed that heavy infections could reduce the weight of survivors. In commercial rabbitries the incidence of coccidiosis has been observed to reach 40% without appreciably affecting their efficiency.

The natural factors tending to reduce infections are discussed and suggestions are made for improved management.—L. P. JOYNER.

SECK, P. (1950). Die Kokzidiose der Kaninchen und Hühner und ihre Bekämpfung. **[Control of coccidiosis in rabbits and fowls.]** pp. 71. Reutlingen: Oertel & Spörer. DM. 2.80. **1673**

The occurrence of coccidia in several animals and birds, with particular attention to the rabbit and fowl, methods of infection and transmission and development in the animal body are dealt with briefly. Reference is made to only three species from the rabbit, namely *Eimeria magna, E. perforans,* and *E. stiedae,* and to only one species from the fowl, *i.e., E. tenella.* On page 7 there is the astonishing statement that the coccidia of the fowl and rabbit are transmissible from one to another.

Other sections deal, respectively, with descriptions of the clinical and histological features of coccidiosis in the rabbit and fowl, and with treatment and control. Good results are claimed for a disinfectant called "Eimeran", and a number of other proprietary preparations are recommended for treatment.

The reader does not gain a very favourable impression of this publication; many of the specific names are spelt with capital letters and there appears to be no consistency as to whether parasitic names should be italicized or not. Futhermore, no references are given. It cannot be recommended to the veterinarian or veterinary student in Great Britain because, for ex-

ample, one of the most common causes of coccidiosis in adult fowls, *E. necatrix,* is not even mentioned.—M. L. CLARKE.

GARNHAM, P. C. C. (1950). **Blood parasites of East African vertebrates, with a brief description of exo-erythrocytic schizogony in** *Plasmodium pitmani.—Parasitology.* **40,** 328-337. **1674**

Evidence from the examination of 1,000 animals and birds indicated that *Haemoproteus* sp. and *Leucocytozoon* sp. were widespread in many bird families and that *Hepatocystes kochi* was common in lower monkeys in localities below 6,500 feet. Incidence of *Plasmodium* was patchy, being absent in all mammals except man and very localized in birds. New names have been given to those parasites where there was reasonable doubt as to their identity with known species, and these are listed. Exo-erythrocytic schizogony is described in *Plasmodium pitmani* of the skink (*Scincus*).

—BERYL A. KAY.

BARANGER, P. & FILER, M. K. (1951). Action de dérivés minéraux et organiques simples sur P. gallinaceum. Rôle possible des systèmes oxydo-réducteurs. **[Action of mineral and organic derivatives on** *Pl. gallinaceum.* **Possible rôle of the oxidation-reduction process.]** *—Acta trop., Basle.* **8,** 144-150. [In French.] **1675**

Ferrous- and ferric salts, metallic copper, cyanuric acid, urea, and a mixture of urea, manganese dioxide and iron, all exert a marked effect upon exo-erythrocytic forms of *Pl. gallinaceum.* The action is weak upon blood organisms, and nil upon oocysts in *Aedes aegypti.* The mixture increases the effect of urea as a prophylactic.—F. R. HARRIS.

COFFIN, G. S. (1951). **Active immunization of birds against malaria.—***J. infect. Dis.* **89,** 1-7. **1676**

Adult ducks immunized against *Plasmodium lophurae* by inoculation of formolized parasitized erythrocytes in water-in-oil emulsion with killed tubercle bacilli had increased resistance to blood-induced infections with the parasite. Some degree of immunity to *Pl. gallinaceum* occurred in adult fowls injected with unparasitized normal erythrocytes of other birds but no immunity occurred when parasitized erythrocytes were used.—E. G. WHITE.

ONO, Y., KINO, T., ISODA, M. & TSURUTA, M. (1945). **[Developmental stages of piroplasms in the horse. I. Endoglobular forms.]—***Jap. J. vet. Sci.* **7,** 93-104. [German summary.] **1677**

The authors reported on a microscopic examination of three strains of *Babesia caballi* from eight horses in Manchuria. They found that the dividing pear-shaped forms occurred at the height of the disease. They described the morphology of the parasites, emphasizing that there was amoeboid movement in parasites in fresh blood cells, the parasites becoming rounded as activity ceased. They found that multiplication occurred in the blood stream by bud formation.—KOGI SAITO.

HIRATO, K., NINOMIYA, M., UWANO, Y. & KUTII, T. (1945). **[Studies on the complement-fixation reaction for equine piroplasmosis.]—***Jap. J. vet. Sci.* **7,** 197-205. [English summary.] **1678**

The authors used the complement-fixation technique in a study of *Babesia caballi* in horses. To prepare antigens, the parasites were washed free from blood platelets and were separated from the erythrocytes. A saline suspension of the piroplasms so cleaned had a high anti-complementary action. An antigen was prepared and submitted to freeze drying.

In horses infected artificially, the complement-fixation test became positive 11–15 days after the parasites appeared in the blood stream [The information available is not quite clear on this point. It is possible that 11–15 days refers to the interval following inoculation—Ed. *V.B.*] The maximum titre occurred two to three days later. In one chronic case, the reaction was strongly positive for more than 100 days.

—KOGI SAITO.

DSCHUNKOWSKY, E. (1948). Limite septentrionale de l'aire de dispersion en Europe, en Proche - Orient et en Moyen - Orient des theilérioses du groupe Theileréa annulata, considérées comme maladies différentes de la fièvre littorale Africane. **[The incidence of** *Theileria* **infection in Europe, the Near East and the Middle East.]—***C.R. Acad. Sci., Paris.* **226,** 1554-1556. **1679**

D. considers that the theileriasis of North Africa, the Near and Middle East and probably central Asia, is distinct from East Coast fever. The species of *Theileria* are best determined by immunity tests, as suggested by Sergent *et al.* (1948).—JAS. G. O'SULLIVAN.

WANG, H. (1950). **Notes on bovine sarcosporidiosis.—***J. Parasit.* **36,** 416-422. [Author's summary modified.] **1680**

Sarcocysts were found in the muscle fibres of the longissimus dorsi of two young steers, in the triceps brachii of a third, and in the longissimus dorsi and the semitendinosus of more than two-thirds of 48 healthy beef carcasses of different grades at a Chicago abattoir. The young

cysts were enveloped in a thin homogeneous membrane while the oldest ones possessed a striated capsule of considerable thickness. Microscopic details of host-parasite structural relationship support host-origin of the capsule. The smaller cysts contained spores of fairly uniform size (10μ) while those in the encapsulated cysts were smaller and slightly pyknotic in appearance. Sporoblasts were found only in the medium-sized cysts. Based on the morphology of cyst and spore, the present *Sarcocystis* reveals affinity to *S. tenella* (sheep), *S. muris* (mouse), and *S. hominis* (man), but not to those infesting ox and buffalo.

MØLLER, T. (1951). Et tilfaelde af letalt forløbende toxoplasmose hos en hund. **[A fatal case of toxoplasmosis in a dog.]**—*Nord. Vet.-Med.* **3**, 1073-1093. [In Danish. English and German summaries. Abst. from English summary.] **1681**

Acute generalized toxoplasmosis was demonstrated in the lungs, stomach, intestine, lymph nodes and brain. M. suggests that the condition is liable to be fatal during a concurrent distemper infection.—JAS. G. O'SULLIVAN.

OTTEN, E. & WESTPHAL, A. (1951). Die Toxoplasmose—Zur Frage der "Berufskrankheit". **[Toxoplasmosis, an occupational disease?]**—*Tierärztl. Umsch.* **6**, 102-103. **1682**

Previous work by the authors and others has shown the frequency of increased titres of toxoplasma antibodies in persons who handle dogs infected with *Toxoplasma*. The possibility of including the infection among professional risks for kennel staff, led to the investigation by the Sabin-Feldman reaction of a small number of people engaged in professions or trades dealing with dogs. Five out of six canine practitioners, three out of five veterinary assistants, all of three keepers of kennels and one of two dog-"strippers" gave positive reactions.—E. V. LOPEZ.

ANON. (1949). Toxoplasmose bei Hasen und Menschen. **[Toxoplasmosis in hares and in man.]**—*Mh. prakt. Tierheilk.* **1**, 184-185. **1683**

Toxoplasma infections in different animals, mainly rodents, which can be transmitted to man, are well known. The source of infection seems to be most often hares and rabbits and the disease has been reported in most European countries. Intracerebral injections of infected material produce brain lesions in mice, and brain emulsions from these mice injected intracutaneously into rabbits provoke local swelling and necrosis. This effect is prevented by convalescent serum, but not by normal serum. In that way diagnosis may be made. Another diagnostic method is the prevention, by convalescent serum, of lesions on the chorio-allantoic membrane of chick embryos, injected with peritoneal exudate of infected mice. The complement-fixation reaction with antigen from infected eggs can also be used. Treatment with sulphathiazole and emetine has been recommended.—E. V. LOPEZ.

See also absts. **1774** (tick-borne protozoan infection); **1922** (report, Basutoland); **1923** (report, Nigeria); **1924** (report, Northern Rhodesia); **1925-1926** (reports, colonial research); **1927** (report, Bechuanaland); **1928** (report, Nyasaland).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

I. ROMANELLI, V. (1949). Contenuto istaminico del sangue e di alcuni organi in bovini sani. **[Histamine content of the blood of healthy cattle.]**—*Atti. Soc. ital. Sci. vet.* **3**, pp. 232-235. **1684**

II. ROMANELLI, V. (1949). Contenuto istaminico del sangue e del fegato in bovini aftizzati. **[Histamine content of blood and liver of cattle, experimentally infected with foot and mouth disease.]**—*Ibid.* pp. 235-239. [English and French summaries. Absts. from English summaries.] **1685**

I. In quantitative determinations of the histamine levels in the blood and organs of healthy cattle R. obtained the following data: histamine level in the blood 0·16 μg. per ml.; liver 66·3 μg. per ml.; kidneys 28·4 μg. per g.; heart 3·25 μg. per g.; lungs 4·195 μg. per g.

II. R. determined the histamine levels in the blood and in the liver in eight cattle infected experimentally with F. & M. disease. In the blood, the histamine levels were three times, and in the liver, 2·3 times those found in healthy cattle. [See preceding abst.]

EPSTEIN, B, FONSECA, N. M. & DE ROBERTIS, E. (1951). **Electron microscope study of red cell membranes after experimental infection with the virus of foot-and-mouth disease.**—*J. exp. Med.* **94**, 171-176. **1686**

An electron microscope study of the red cell membranes of g. pigs infected with the Vallée O type strain of F. & M. disease virus is described. Red blood cells washed in saline were found infective for normal g. pigs 42–48 hours after inoculation but not after 92 hours, which suggests that the erythrocytes carry virus entities only at the height of generalization of the disease.—C. BOULTER.

TRAUB, E. & SCHNEIDER, B. (1948). Züchtung des Virus der Maul- und Klauenseuche im bebrüteten Hühnerei. [**Cultivation of the virus of foot and mouth disease on chick embryos.**]—*Z. Naturforsch.* 3 **b,** 178-187. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*) 148, 123. (1950.)] **1687**

Whereas uninterrupted passaging from egg to egg led to loss of the virus in the third subculture it was fully adapted to the egg after four alternate egg and g. pig passages. Only one strain out of the original mixture of ten persisted in egg cultures.—A. MAYR-HARTING.

TRAUB, E. (1949). La culture du virus aphteux sur embryons de poulet. [**Growth of foot and mouth disease virus on the chick embryo.**]—*Bull. Off. internat. Epiz.* **31,** 470-499. [English, Italian, Spanish and German summaries.] **1688**

The culture of F. & M. disease virus on chick embryos is described. A mixture of ten strains of all three types of virus was used. After a few passages, deposition of infected material on the chorio-allantoic membrane was sufficient to permit culture. Adaptation to the chick embryo was affected by alternate passage through eggs and g. pigs. After five such alternations serial passage through 123 eggs was successful. Only O virus could be so passaged. The virulence of the virus varied with passage. Allantoic fluid and embryonic tissues contained virus, but not the egg yolk. Lesions in the embryo are described. Virus collected after 88 passages did not produce an efficacious vaccine. —G. V. LAUGIER.

SCHNEIDER, B. (1950). Versuche zur aktiven Immunisierung von Rindern gegen Maul- und Klauenseuche mit Impfstoffen aus bebrüteten Hühnereiern. [**Immunization of cattle against foot and mouth disease with a vaccine passaged in chick embryos.**]—*Mh. prakt. Tierheilk.* 2, 19-24. **1689**

An attempt to attenuate F. & M. disease virus by passaging it in chick embryos was unsuccessful, as it was still virulent for g. pigs and cattle even after 150 passages.

The effect of adsorption of egg-passaged virus was then studied. Virus from passages 135–183 was diluted and adsorbed on to aluminium hydroxide. Two inoculations of a 20% virus content conferred some immunity on a few cattle, so it was hoped that some progress would be possible on these lines.—J. EDWARDS.

WUNDERLI, H. K. (1951). Untersuchungen über die Adsorption des Maul und Klauenseuche-Virus an Aluminiumhydroxyd. [**Research on aluminium-hydroxide adsorption of foot and mouth disease virus.**]—*Z. Hyg. InfektKr.* 132, 1-22. **1690**

W. discussed a method for the determination of the relative measure of adsorption of F. & M. virus on samples of aluminium hydroxide. In the preparation of the vaccine, the hindering action of phosphate buffer when washing the filter can be neutralized by the addition of glycocoll buffer which has an activating effect on the adsorption. He points out that samples of aluminium hydroxide may vary and the adsorption power depends on the source of origin of the sample, *i.e.* on the amount of aluminium hydroxide in the sample.

To produce a safe vaccine he recommended that the adsorption power of the aluminium hydroxide used should be tested by the above method.—E.M.J.

FLÜCKIGER, G. (1951). Rapport de la Commission Permanente de l'O I.E. pour l'étude des problèmes techniques que pose l'immunisation antiaphteuse. Activité de 1946 à 1951. [**Report of the foot and mouth disease committee of the Office International des Epizooties on immunization.**]—*Bull. Off. internat. Epiz.* 36, 430-433. **1691**

The progress achieved by the Permanent Committee between 1939 and 1951 is reviewed. In 1951, 18 reports were studied showing remarkable progress. Determination of criteria for the standardization of F. & M. disease vaccines and encouragement of research into new vaccines are among the committee's most important achievements.—G. V. LAUGIER.

BELIN, C. (1950). Des quantités et de la valeur infectante du virus aphteux obtenu par la méthode des complexes vaccino-aphteux. [**Studies on the virus of foot and mouth disease.**]—*C.R. Acad. Sci., Paris.* 230, 2055-2056. **1692**

Some aspects of the Belin F. & M. disease vaccine were discussed. The antigenic content is high. Recent work revealed that these vaccine complexes contain at least one million infective doses per g.—G. V. LAUGIER.

NAGEL, H. C. (1951). La prueba de fijacion del complemento en el diagnostico diferencial de estomatitis vesicular y fiebre aftosa. [**The complement fixation test in the differential diagnosis of vesicular stomatitis and foot and mouth disease.**]—*Gac. vet., B. Aires.* 13, 147-162. [English and German summaries.] **1693**

The complement-fixation test was found to be capable of distinguishing accurately between

F. & M. disease and vesicular stomatitis. Even when antigens from both infections were mixed, in varying proportions, the reactions to the corresponding antisera (prepared in g. pigs) were quite distinct.—I. W. JENNINGS.

LEVADITI, C. & VAISMAN, A. (1951). Symbiose entre le type B encéphalitogène du virus Coxsackie et celui de la fièvre aphteuse neurotrope. **[Symbiosis between the Coxsackie virus and a neurotropic foot and mouth disease virus.]**—*Ann. Inst. Pasteur.* **81,** 210-213. **1694**

Experimental work is described which shows that symbiosis between the Coxsackie virus and neurotropic F. & M. disease virus is possible after four consecutive passages in the brain of unweaned mice. Alterations were observed in the Coxsackie virus in adult mice after the second passage.—G. V. LAUGIER.

ANTONINI, A. (1948). Enzoozia di meningo encefalite bovina. **[An outbreak of meningo-encephalitis in cattle.]**—*Clin. vet., Milano.* **71,** 308-310. **1695**

The author reported an outbreak of five cases of bovine meningo-encephalitis, of unknown aetiology, in a herd recently vaccinated against F. & M. disease.—I. W. JENNINGS.

REMLINGER, P. & BAILLY, J. (1949). La maladie d'Aujeszky est-elle susceptible d'apparaître „de novo"? **[Aujeszky's disease.]**—*Bull. Acad. Méd. Paris.* **133,** 280-281. **1696**

In 1940 the authors reported the spontaneous occurrence of Aujeszky's disease in a dog at Tangier. A second case is now reported of a bitch aged four years, which suddenly developed intense pruritus and encephalitic symptoms and died the next day. Autopsy revealed only marked congestion of the kidneys. Another dog, inoculated with emulsion of the medulla, developed similar symptoms and died. Analogous results were obtained in a rabbit, a rat, and a mouse. The dog's history was completely negative, suggesting a case of spontaneous infection. Aujeszky's disease has just as suddenly and without any known cause appeared in other countries, *e.g.* the U.S.A., where it spread from Brazil across Central America to Lake Michigan; in Holland, France and Tunisia. No direct communication was found between the old and new foci of infection, which were frequently separated by unsurmountable geographical barriers.—W. R. BETT.

VON MALTITZ, L. (1950). **Rabies in the Northern Districts of South West Africa.**—*J.S. Afr. vet. med. Ass.* **21,** 4-12. **1697**

Since 1925 many attempts to diagnose rabies have failed. Until the recent outbreak in 1948, clinical diagnosis was confirmed only in 1938 and 1947. Between March 1948 and Sept. 1949, positive specimens were collected from two jackals, one dog, one goat, two cows, one calf and eight oxen. Rabies is believed to have caused a considerably greater number of deaths among farm cattle than the 11 cases actually confirmed.

Circumstantial evidence suggests that jackals may be the most important carriers; the Viverridae are not suspected in this area. It must be presumed that the cattle were bitten by jackals, since the author suspects them of being the reservoir of infection.

Affected cattle do not viciously attack other cattle; there is no mention of pruritus at the site of infection. The main symptoms are of acute abdominal pain, with straining, salivation and bellowing; most cattle die within five days of the onset of symptoms.

In differential diagnosis, lead poisoning and "lamsiekte" are especially to be borne in mind.

The paper ends with sections on "the collection and despatch of material" and "Control".—F. B. LEECH.

REMLINGER, P. & BAILLY, J. (1951). Un cas de rage furieuse chez un lapin de clapier domestique. **[A natural case of furious rabies in a tame rabbit.]**—*Maroc med.* **30,** 613-615. **1698**

A rabbit kept in a communal hutch contracted furious rabies, attacking and severely wounding its companions. Diagnosis was established by the presence of Negri bodies in the hippocampus and by inoculation of brain material into laboratory animals, all of which died with typical symptoms.

As the rabbit was protected from contact with dogs—hitherto believed to be the principal source of infection in Morocco—the authors suggested that it might have been infected by a rabid rat, though they admitted that there was no proof of the existence of rabies in the rat population. The possibility was discussed and references quoted.—F. B. LEECH.

KOPROWSKI, H. & COX, H. (1951). **Recent developments in the prophylaxis of rabies.**—*Amer. J. publ. Hlth.* **41,** 1483-1489. **1699**

Pasteur treatment was critically reviewed and compared with antiserum treatment. Neuroparalytic accidents follow about 0·17% of Pasteur treatments but are not a risk of antiserum treatment. The latter is of considerable value in cases of severe exposure.—F. B. LEECH.

I. ULLRICH, K. (1951). Zur Tollwutbekämpfung in Berlin. **[Control of rabies in Berlin.]**

—*Berl. Münch. tierärztl. Wschr.* No. 3. pp. 51-53. 1700

II. ZUNKER, M. (1951). Nochmals: Tollwutbekämpfung in West-Berlin. **[Rabies control in West-Berlin.]**—*Ibid.* pp. 53-54. 1701

I. According to Ullrich, obligatory protective inoculation of dogs against rabies usefully supplements veterinary-police measures. Supervision of captured stray dogs should be the duty of the State, not of an animal protection society.

II. Z. discussed and criticized various points.—W. R. BETT.

KOCOWICZ, I., RATOMSKI, A. & WIŚNIOWSKI, J. (1951). Choroba poszczepienna psów po szczepieniu przeciwwściekliznowym i jej etiologia. **[Post-vaccination disease in dogs after rabies vaccination.]**—*Med. weteryn.* 7, 665-670. [English and Russian summaries.] 1702

Thirty-one dogs that had been inoculated with fixed virus died with signs of rabies, but no Negri bodies were demonstrable. The vaccine prepared from this strain of fixed virus and kept for 2–3 years proved to have lost its virulence for laboratory animals.—J. R. MITCHELL.

REMLINGER, P. & BAILLY, J. (1950). Unification des vaccinations antirabiques humaine et vétérinaire. **[Unification of vaccination of human beings and animals against rabies.]**—*Bull. Acad. Méd., Paris.* 134, 91-92. 1703

The Institut Pasteur at Tangier dispenses the same phenolized anti-rabies vaccine for human and animal treatment in ampoules of 5 or 20 ml.—F. B. LEECH.

NAGANO, Y. (1949). Sur la cause de la non-proportionnalité dans la réaction de neutralisation du virus de la vaccine. **[Serum neutralization of vaccinia virus.]**—*Jap. J. exp. Med.* 20, 145-152. [In French.] 1704

Incubation for 24 hours at 3°C. of mixtures of vaccinia virus and diluted immune serum resulted in neutralization of virus in constant proportions. Undiluted immune serum neutralized proportionately less virus than diluted serum. The possible reasons are discussed.

—E. G. WHITE.

DOWNIE, A. W. (1951). **Jenner's cowpox inoculation.**—*Brit. med. J.* Aug. 4th, 251-256. 1705

An historical review is presented of variolation, of improved methods of inoculation, of Jenner's cow pox inoculation, and of the establishment of vaccination against smallpox. The nature of cow pox at the present time, and the immunological relationship between cow pox, vaccinia, and variola viruses are considered. Although compulsory vaccination has been abolished in Great Britain, Jenner's vaccination is still an essential part of the procedure adopted to prevent the spread of smallpox when infection is introduced from abroad.—W. R. BETT.

DYAR, M. G. (1951). **Orf, sheep-pox or ovinia.**—*J. Irish med. Ass.* 29, 33-34. 1706

Two cases of orf in human beings are described, both of which had had contact with lambs having mouth lesions. In the absence of secondary infection after accidental inoculation by way of cuts, the lesion appeared on the hand in 12 days as a granulomatous mass covered by a blister, painless with no constitutional disturbance. Resolution occurred in 5–8 weeks spontaneously, with no residual scar.

—R. A. HUCK.

SALAFRANCA, E. S. & GENEROSO, J. D. (1949). **Fowl-pox vaccine from fowl-pox virus cultivated on the chorio-allantoic membranes of developing eggs.**—*Philipp. J. anim. Indust.* 10, 125-141. 1707

Publication of this paper has been delayed since 1941 on account of the war. It gives details of the methods used in the preparation of fowl pox vaccine by growing the virus on chick embryos. In limited trials the vaccine proved satisfactory.—D. LUKE.

SHOPE, R. E. (1951). **The provocation of masked swine influenza virus by infection with human influenza virus.**—*Tijdschr. Diergeneesk.* 76, 414-420. [In English.] 1708

Pigs were fed earthworms containing lungworm larvae known to be infected with swine influenza virus. At the end of one month each received, intranasally, human influenza virus and a suspension of *Haemophilus influenzae suis*. Mild clinical disease developed in all cases. The pigs were killed at intervals up to 14 days after infection. Pneumonic lung samples and lungworms were tested for the presence of virus and the blood serum was tested for neutralizing antibodies. In the lungs and the lungworms only swine influenza virus could be detected, though neutralizing antibodies for both swine and human type virus were present in the blood. These findings are interpreted as indicating that the swine fever virus which was "masked" in the pigs infected with lungworms was provoked to infectivity by the human virus.—D. LUKE.

LEVADITI, C. (1951). La "coelogenèse" névraxique du virus Coxsackie. **[Cavitation of the central nervous system tissues caused by Coxsackie virus.]**—*Ann. Inst. Pasteur.* 81, 260-274. 1709

Of the various types of Coxsackie virus dis-

covered, type B, originally described by Dalldorf & Sickles [*Science*. **108**, 61.], differs from the others in being specifically neurotropic. L. studied the development of cavities in the brains of mice inoculated intracerebrally when three days old with the virus and killed at different intervals afterwards. He names the process "coelogenesis" and describes the lesions that develop (i) in the meninges, (ii) in the nerve cells and (iii) those in the white matter leading to coelogenesis.

Meningitis becomes evident from 6–12 hours after inoculation and reaches its maximum at the 36th hour. The lesion is characterized by the progressive accumulation of lymphocytes, polymorphonuclear leucocytes and large macrophages, some of which phagocytize red cells.

Changes involving the neurones of the cortex, hippocampus and more especially the three layers of Ammon's horn, begin at the 12th hour. The neurones show chromatolysis and the spaces around them become invaded by polymorphonuclear leucocytes, many of the nuclei of which are deformed and stain badly. The basichromatin of the neurone nuclei condenses into granules which disperse and collect on the nuclear membrane whilst the oxychromatin replaces it in the nuclear mass.

Coelogenesis develops very rapidly, killing the young mouse in two, three or at most five days. The first changes to be detected are haemorrhages, more or less diffuse, situated principally in the white matter of the cerebral cortex, hippocampus and Ammon's horn. The white matter undergoes a progressive oxyphile degeneration followed by necrosis, due partly to the haemorrhage and partly to the direct action of the virus. Polymorphonuclear leucocytes and small round cells invade the necrotic area and, soon, themselves show karyolysis and oxyphile degeneration. Cavities develop in the necrotic areas giving the tissue a spongy appearance. The reaction is due to the formation of new capillaries with voluminous endothelium surrounded by neuroglial cells (granulo-adipose cells of Rio Hortega). The latter cells multiply in the lesions and secrete an exudate in which they become free. They have one or two nuclei, usually excentric and vacuolated cytoplasm, some of the vacuoles containing basophile inclusions and lipoid derivatives from disintegration of the myelin of the white matter. There are therefore three stages of coelogenesis (i) degeneration, (ii) inflammation of vascular origin and (iii) liberation of mesoglial cells in the liquid contents of the cavities.

A similar coelogenesis occurs in animals that have some resistance and survive inoculation with herpes virus and in animals which die with autosterilization of the brain. It is also found in foxes infected with fox encephalitis virus.

—J. R. Hudson.

Chang, T. W. & Wenner, H. A. (1951). **Interrelationhsips observed between Lansing strain of poliomyelitis virus and virus of sporadic bovine encephalomyelitis.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 659-662. [Authors' summary and footnote modified.] **1710**

Two strains of bovine encephalitis virus have been adapted to mice, cotton rats, and rhesus monkeys, causing meningo-encephalomyelitis. Evidence was presented to show that the Lansing strain of poliomyelitis virus and the bovine encephalitis virus are related serologically.

The authors state that they have considered carefully the possibility of contamination of infected yolk suspension of the bovine virus with the Lansing strain of poliomyelitis virus. Against this likelihood has been the fact that bovine encephalitis virus has been passaged many times in chick embryonic tissues, that each of the strains studied caused encephalitis in hamsters and guinea pigs, and finally, that the egg-adapted strain was neutralized by Lansing serum as well as the mouse-adapted.

Garel, E.-C.-E. (1945). Encéphaloses enzootiques du cheval dans l'ouest de la France. [**Enzootic "encephalosis" of horses in the west of France.**]—*Thesis, Alfort*. pp. 63. **1711**

This thesis contains no original observations, but gives an account of a disease of horses previously described by Thiéry *et al.* [*V.B.* **15**, 759.] characterized by nervous symptoms associated with hepatic lesions, which appeared in an enzootic form in the West of France during the autumn of 1941. G. suggests that the term "encephalosis" is preferable to "encephalomyelitis", previously used by Thiéry and other workers, as no histological evidence of an inflammatory process of nervous tissue has been observed. A comparison is made between this condition and other "liver-brain" diseases of horses reported elsewhere, such as those attributed to plant poisoning from *Crotalaria* and *Senecio* species (*e.g.* "Bottom disease", "Winton disease", "Walking disease", "Dunziekte", "Schweinsberg disease" etc.—T. W. F. Pay.

Steck, W. (1951). Recherches sur l'anémie infectieuse des chevaux. [**Studies on equine infectious anaemia.**]—*Bull. Off. internat. Epiz.* **36**, 327-335. [English and German summaries.] **1712**

Numerous petechial haemorrhages on the

under surface of the tongue are a useful aid for clinical diagnosis. The infection spreads easily, but in most cases remains latent.

—A. MAYR-HARTING.

SCHWEIZER, R. (1951). L'anémie infectieuse dans le Canton de Vaud. (Observations des années 1947-1950.) **[Equine infectious anaemia in Vaud (Switzerland).]**—*Schweiz. Arch. Tierheilk.* **93**, 540-553. [In French, English, German and Italian summaries. **1713**

Maps are given to illustrate the occurrence of cases of equine infectious anaemia confirmed at autopsy and by histological examination in the Canton of Vaud. No influence of sex or age on morbidity was observed. More cases occurred in summer than in winter. Typical sublingual haemorrhages were observed in 90% of anatomically positive and in 26% of negative cases.—W. STECK.

SUGANO, S., KOBAYASHI, T. & YAMAGIWA, S. (1949). **Pathological studies on the bacterial infection associated with infectious anemia. I. The significance of the mixed infection with *Shigella equirulis* in infectious anemia.**—*Jap. J. vet. Sci.* **11**, 127-139. [In Japanese. Abst. from English summary.] **1714**

A pathological study of foals and adult horses showed *Bacterium viscosum equi* to be associated with the acute, but not the latent, form of infectious anaemia, as a concomitant organism.—W. R. BETT.

BELLER, K. & TRAUB, E. (1951). Untersuchungen über die ansteckende Blutarmut der Pferde. Immunitätsversuche. **[Immunization experiments in equine infectious anaemia.]**—*Mh. prakt. Tierheilk.* **3**, 193-206. **1715**

Immunological tests revealed striking variations in the immunizing ability of four different strains of the equine infectious anaemia virus.

—I. W. JENNINGS.

MANNINGER, R. (1949). **Studies on infectious abortion in mares due to a filterable virus.**—*Acta vet. hung.* **1**, 62-72. [In English.] **1716**

M. considers that the infectious abortion of mares in Hungary is similar to the virus abortion of mares described by Dimock & Edwards (1933). He considers, however, that the causal virus is that of equine influenza, this opinion being based on his finding that artificial nasal infection of mares with material from aborted foetuses is followed between the 30th and 72nd hours by a febrile reaction which lasts from 3–8 days. At the same time there is conjunctivitis and also nasal catarrh with coughing. Horses which had recovered from a natural attack of equine influenza did not develop such febrile reaction on infection with material from aborted foetuses.—R. S. MOIR.

FERRERA, A. M. (1950). Contribucion al estudio del aborto virico de las yeguas en España. **[Virus abortion of mares in Spain.]**—*Trab. Inst. Biol. anim. Madr.* **9**, pp. 139-197. **1717**

F. reviewed the literature and described an outbreak of virus abortion in mares affecting nearly half a group of 125 animals. Abortion took place about the 9th–11th months, without any premonitory symptoms. The foetus in typical cases had necrotic foci in the liver and intranuclear inclusion bodies were present. The foetal spleen was enlarged and in many cases there was broncho-pneumonia in the lungs.

The infection was transmitted to g. pigs in the late stages of pregnancy, causing abortion, and the virus was later recovered. It was also grown on the chorio-allantoic membrane of chick embryos.

A formolized vaccine prepared from foetal viscera was used with apparent success in the protection of g. pigs. Mares have been inoculated but the efficiency of the vaccine has yet to be assessed. Full details of thee experiments are given with photomicrographs of the lesions.

—I. W. JENNINGS.

CILLI, V., MAZZARACCHIO, V. & ROETTI, C. (1951). Le foyer de peste bovine au jardin zoologique de Rome. **[The outbreak of rinderpest in the Rome Zoo.]**—*Bull. Off. internat. Epiz.* **35**, 444-451. **1718**

Wild ruminants imported from Somaliland were responsible for a severe and widespread outbreak of rinderpest in the Rome Zoo. The course of the outbreak together with details of diagnostic methods used are described. Slaughter of all susceptible animals was necessary.

—G. V. LAUGIER.

YASIN. (1951). La peste bovine au Pakistan. **[Rinderpest in Pakistan.]**—*Bull. Off. internat. Epiz.* **36**, 108-115. [English summary.] **1719**

The economic losses due to rinderpest are much underestimated if the official mortality figures only are taken into account. Serum simultaneous inoculations have dangers as blood parasites, particularly piroplasms, are thus transmitted. Vaccine from infected goat tissue is now mainly used.—A. MAYR-HARTING.

RIX, J. C. (1951). **An attempt to transmit rinderpest to Hong Kong bred Chinese pigs.**—*J.R. Army vet. Cps.* **22**, 114. **1720**

In two 40 lb. Chinese pigs injected subcutaneously with 5 ml. of macerated spleen pulp

from a calf which had died of rinderpest, a thermal reaction occurred between the third and fifth days and slight respiratory symptoms were observed.—D. LUKE.

ALEXANDER, R. A. & HAIG, D. A. (1951). **The use of egg attenuated bluetongue virus in the production of a polyvalent vaccine for sheep. A.—Propagation of the virus in sheep.**—*Onderstepoort J. vet. Sci.* **25**, 3-15. [Authors' summary copied *verbatim*.] **1721**

A brief description of Theiler's classical method of bluetongue vaccine production is given and various modifications introduced from time to time are recorded.

In an attempt to adapt the recognized technique to the routine mass production of a polyvalent vaccine using fully attenuated egg adapted (A) strains of virus three difficulties were encountered: (a) As a result of even a single passage through susceptible sheep the adapted (A) strains were transformed at least partially into apparently original or sheep strains (O) so that quantitative control could not be carried out in eggs. (b) During the course of change from the A to the pseudo-O phase at least some strains show a marked change in antigenic structure. (c) Since the majority of sheep infected with egg attenuated virus show no clinical reaction it is impossible to eliminate [immune] animals included by accident amongst the virus donors. In the final mixture specific antibodies in the serum of such immune sheep neutralize the virus propagated in the susceptible donors, thus making the vaccine inert. This has proved an insurmountable difficulty.

Though passage through sheep causes a change from the A to the pseudo-O type of virus there is no reversion to original virulence.

KOMAROV, A. & GOLDSMITH, L. (1951). **[A disease, similar to bluetongue in cattle and sheep in Israel.]**—*Refuah vet.* **8**, 69-74. [Abst. from English summary, p. 100.] **1722**

Bluetongue, which has not previously been encountered in cattle outside of Africa except in Cyprus, has been identified in cattle and sheep in Israel. The virus has been grown in embryonated eggs, and causes a disease which is indistinguishable clinically from S. African bluetongue in both cattle and sheep; but the S. African vaccine does not afford full protection against the virus isolated in Israel.

—G. B. S. HEATH.

LE CHUITON, F. (1951). Sur la transmission au cobaye du virus de la peste porcine. **[Transmission of swine fever virus to g. pigs.]**—*Rev. Immunol. Thérap. antimicrob.* **15**, 213-216. **1723**

The author re-affirmed the conclusions of earlier work, that swine fever virus can be transmitted by serial intratesticular inoculation in g. pigs, with enhancement of its virulence for the latter and attenuation for swine. The passage virus would seem to be of little value as a vaccine for pigs.—J. T. DONE.

DOLECEK, V. (1949). **Teschen disease.**—*F.A.O. Agric. Studies.* No. 10. pp. 16-22. **1724**

A general account including history, symptoms, P.M. and histological findings. Much of the information is obtained from the work of Klobouk. Some figures of disease incidence and amounts paid in compensation for slaughter in 1946 and 1947 are quoted from the Czechoslovakian Ministry of Agriculture. The efficacy of vaccination was discussed at a conference in Prague in 1948.—K. G. TOWERS.

KLOBOUK, A. (1950). O biologicznych własnościach zarazka choroby cieszyńskiej świń. **[The virus of porcine encephalomyelitis.]**—*Med. weteryn.* **6**, 509-515. [English and Russian summaries.] **1725**

K. failed to find evidence of the presence of virus in the blood and urine of pigs infected with encephalomyelitis. The virus appears to be purely neurotropic and can be isolated only from the cerebrospinal fluid. Animals which recover from the disease acquire life-long immunity. Making use of this K. succeeded in immunizing pigs with phenolized material from the brain and cerebrospinal fluid, but very large doses were required. Attention is drawn to the characteristic rise of blood sugar level during the disease. In later stages the blood sugar level reaches 103·14 mg.%. This is said to be due to the action of virus on the sugar regulating centre in the brain. Cases are recorded in which the disease has been diagnosed as swine fever; differentiation is therefore necessary. Pigs which recover from Teschen disease are susceptible to swine fever. Characteristic lesions are seen in the grey matter of the spinal cord, cerebrum and cerebellum and in the meninges. Lymphocytic foci are observed around the vessels, but in the spinal cord they are concentrated in the ventral horn. There is degeneration of the neuroglial cells. The macroscopic picture cannot be considered as characteristic or diagnostic. Various non-specific treatments have been used without success, but cases of spontaneous recovery without treatment have been reported. K. strongly recommends slaughter as the only means of eradication and control.

—JOHN R. MITCHELL.

GARD, S. (1951). **Studies on the virus of encephalomyelitis enzootica suis (Teschen**

disease). Excretion of virus after oral infection.—*Arch. ges. Virusforsch.* **4**, 249-255. [In English. Abst. from author's summary.] 1726

The virus of Teschen disease was viable after treatment with ether for 24 hours at +4°C. and after precipitation with 40% ammonium sulphate.

Of 15 animals infected orally six developed symptoms and microscopic lesions typical of the Teschen disease. Some excreted virus in the faeces from the third day after feeding and later developed symptoms. In one with typical symptoms no virus could be detected in the faeces at any time.

All six had lesions in the olfactory bulbs. No definite conclusions as to the portal of entry of the virus can be drawn.

RISER, W. H. (1950). **Progress in understanding canine distemper and associated ailments.** —*J. Amer. vet. med. Ass.* **116**, 211-216. 1727

A general review of the development of the concept of "distemper" as one manifestation of a virus complex.—J. T. DONE.

GORET, P. (1948). "Maladies" des chiens. Sur les échecs de la vaccination spécifique contre la maladie de Carré. [**Canine diseases. Failures of specific vaccination against dog distemper.**]—*Rev. Méd. vét., Lyon et Toulouse.* **99**, 170-176. 1728

Canine diseases in France are reviewed in the light of English experiences. Brown mouth, infectious catarrhal fever, hard pad disease, etc., are admitted, but it is held that distemper remains the main disease of dogs. Vaccination failures are held to be true failures arising out of hypervirulence of the virus. It is felt that the general use of ferret adapted virus has given rise to a virus with atypical pathogenic properties.—G. V. LAUGIER.

DAUBNEY, R. (1949). **Distemper immunisation. The "vaccine-plus-virus" method.** [Correspondence.]—*Vet. Rec.* **61**, 433-434. 1729

D. compared the difficulties encountered in effectively immunising dogs against distemper by the vaccine-virus method to those experienced in rinderpest vaccination before the introduction of mutated strains of the virus. In his opinion it is impossible to make a success of any vaccine-plus-virus method under ordinary field conditions, and in the immunization of animals against virus diseases the future lies almost entirely with living vaccines consisting of mutated strains of virus.

He also called attention to the possible existence of atypical strains of virus circulating in partially immune populations such as animals vaccinated with dead tissue vaccines.

—J. T. DONE.

LUCAM, F. & GORET, P. (1951). Ovoculture du virus de la maladie de Carré. [**Cultivation of the virus of canine distemper on eggs.**]—*C.R. Acad. Sci., Paris.* **233**, 107-109. 1730

A short note confirming the finding of other workers that the virus of canine distemper can be grown in the developing hen's egg. The ferret-adapted strain used showed loss of pathogenicity during egg passage but retained its immunizing properties in the ferret.—E. G. WHITE.

GRUNNET, N. T. (1949). Nogle forsøg til belysning af hundesygevirus' adsorptionsforhold til aluminiumhydroksyd. [**The adsorbtion properties of distemper virus on aluminium hydroxide.**]—*Maanedsskr. Dyrlaeg.* **61**, 101-106. 1731

Eighteen ferrets were vaccinated with small doses of distemper virus (Green's) adsorbed on aluminium hydroxide. From the results obtained a definite vaccination dose could not be defined as 16 of the vaccinated ferrets developed distemper. There was no great difference between the results obtained from vaccines prepared from dried and those from undried virus.

—H. BOYD.

SCHEITLIN, M., SEIFERLE, E. & STÜNZI, H. (1951). Klinische und pathologisch-anatomische Beobachtungen über die sog. "Hard Pad Disease" beim Hund. [**Hard pad disease in dogs.**]—*Schweiz. Arch. Tierheilk.* **93**, 91-129. [English, French and Italian summaries.] 1732

Of 130 cases observed 15 were examined P.M. In chronic cases keratosis was seen on the nose, the pads and the skin of the abdomen. Anaemia, granulocytopenia and in about half the cases disturbances of the central nervous system were observed.

In acute cases high fever, granulocytosis and lymphopenia were present.

A disseminated encephalitis and myelitis and in some cases hepatitis and kidney lesions were observed P.M.

On account of various histological observations the authors suggest a close relationship between hard pad disease and contagious canine hepatitis.

Detailed histological descriptions and photographs are given.—W. STECK.

COHRS, P. (1951). Die Entmarkungs-Enzephalitis (Hard pad disease) des Hundes. [**Hard pad disease.**]—*Dtsch. tierärztl. Wschr.* **58**, 129-134. 1733

This is a description of the symptoms and

lesions of hard pad disease illustrated by photomicrographs. No new knowledge.
—I. W. JENNINGS.

BERG, O. A. (1950). Aktuelle virussykdommer hos hund og rev. **[Virus diseases in dogs and foxes.]**—*Nord. Vet.-Med.* **2**, 1001-1018. [English and German summaries. Abst. from English summary.] **1734**

B. reviewed distemper and associated forms of encephalitis in dogs and discussed the differentiation between distemper in dogs and foxes, "hard pad" disease in dogs, contagious fox encephalitis and canine virus hepatitis.—H. BOYD.

MILES, J. A. R., PARRY, H. B., LARIN, N. M. & PLATT, H. (1951). **Cultivation of canine hepatitis virus in embryonated hen's eggs and its subsequent transmission to dogs.** [Correspondence.] — *Nature, Lond.* **168**, 699-700. **1735**

Evidence was presented of the cultivation of the aetiological agent of virus hepatitis of dogs in the yolk sac of 6-day embryonated eggs through 12 serial passages.—J. T. DONE.

LUCAM, F. & GORET, P. (1951). Ovoculture du virus de l'hépatite contagieuse du chien. **[Cultivation of infective canine hepatitis virus on hens' eggs.]**—*C.R. Acad. Sci., Paris.* **233**, 277-279. **1736**

The ferret adapted virus (fifth passage) was grown in the allantoic sac of eggs inoculated after 6–7 days' incubation and at the time of writing had been carried on for 87 passages in series. Virulence for the ferret was lost after 35 passages in eggs but some degree of protection was conferred against a test dose of virulent ferret-adapted virus. At the initial transfer to the egg the ferret-adapted virus caused 80% mortality of embryos within 96 hours, most deaths occurring in 36–48 hours.—E. G. WHITE.

GORET, P., LUCAM, F., JOUBERT, L., FLACHAT, CH. & OTT, A. (1951). Pouvoir pathogène pour le chien du virus de l'hépatite contagieuse du chien (fox encephalitis) adapté au furet. **[Canine hepatitis virus passage in the ferret.]**—*Bull. Acad. vét. Fr.*, **24**, 331-332. **1737**

It is claimed that canine hepatitis virus adapted to French ferrets can be transmitted to dogs and give rise to symptoms and histological findings identical with those of control dogs infected with fox encephalitis.—G. V. LAUGIER.

GORET, P. & LUCAM, F. (1951). Sensibilité du furet (Putorius furo L.) au virus de l'hépatite contagieuse (fox encephalitis). **[Sensitivity of ferrets to the virus of infective hepatitis (fox encephalitis).]**—*C.R. Acad. Sci., Paris.* **232**, 2270-2271. **1738**

Cross-immunity tests, transmission experiments, symptoms and histological findings are detailed, which are claimed to indicate that canine hepatitis virus is definitely pathogenic for French ferrets.—G. V. LAUGIER.

BLANC, G. & BRUNEAU, J. (1951). Action du virus de la pneumopathie du cobaye sur la gestation au cours de l'infection apparente et de l'infection inapparente. **[Virus pneumonia of g. pigs; effect of apparent and of inapparent infections on pregnancy.]**—*C.R. Acad. Sci., Paris.* **232**, 1716-1718. **1739**

It was shown that the virus penetrates the placental barrier in g. pigs and rabbits. G. pig embryos always died; rabbit embryos were killed only during the first 15 days of gestation.
—G. V. LAUGIER.

COLLIER, W. A. & DINGER, J. E. (1950). **Research on Newcastle disease 1940-1942.**—*Doc. neerl. Ind. Morb. Trop.* **2**, 189-192. [In English. Authors' summary modified.] **1740**

Inclusion bodies in eosinophile leucocytes were found in the allantoic membrane and the liver of duck embryos infected with the virus of Newcastle disease. The strain was subinoculated up to 1942 in 165 passages in duck eggs.

It is easy to infect various kinds of wild birds, which are listed, with the virus of Newcastle disease. The strain was maintained by means of intracerebral subinoculation of brain suspensions. No contact infections occurred. Protection Tests in which small birds served as test animals accurately reflected the state of immunity of the birds the serum of which had been used for the test. Using the protection test in duck embryos it was possible to recognize a strain of virus of Newcastle disease which had been altered by four passages through g. pigs.

BONADUCE, A. (1948). Ricerche sulla riduzione del bleu di metilene da parte del virus della pseudo-peste aviare Italiana. **[The reduction of methylene blue by the virus of Newcastle disease.]**—*Clin. vet., Milano.* **71**, 377-380. **1741**

The virus of Newcastle disease had no reducing action on methylene blue when the method described for fowl plague virus by Levaditi & Lèpine (1931) was used. No fowl plague virus controls were, however, employed in these tests.—G. P. MARSHALL.

SEETHARAMAN, C. (1951). **Immunity in fowls following vaccination against Ranikhet disease.**—*Indian vet. J.* **28**, 13-16. **1742**

Of 129 fowls tested 2–4 years after immu-

nization with egg propagated attenuated Newcastle disease virus, 123 were immune.

—K. C. SINHA.

ANGULO, J. J. (1951). **On the identity of the so-called filamentous forms of influenza and fowl pest viruses.**—*Arch. ges. Virusforsch.* **4,** 199-206. [In English. Abst. from author's summary.] **1743**

The author casts some doubt on the filamentous forms of Newcastle disease and influenza viruses, reported by certain authors, and considers that they are probably artefacts.

TENDEIRO, J., PALMEIRO, J. M. & ARAUJO, J. S. (1949). A ornitose dos columbídeos em Portugal. [**Ornithosis in pigeons in Portugal.**]—*Rev. Med. vet. Lisboa.* **44,** 8-16. **1744**

The lesions found were, congestion of the gall bladder and of the oviduct and hypertrophy of the heart. Giemsa stained smears from the lungs, liver and spleen revealed granules similar to elementary bodies. The virus was isolated by inoculation of mice and embryonated eggs.—F. A. ESTEVES.

SMITH, R. C. F. & KINSELLA, J. J. (1951). **Lymphocytic choriomeningitis in Co. Durham.**—*Lancet.* **261,** 882-883. **1745**

A localized outbreak of benign lymphocytic meningitis is described. Cats and dogs in the area were examined as a possible source of infection, but laboratory findings were inconclusive.—C. BOULTER.

DEL AGUA, O. (1951). Fièvre du Queensland. [**Q fever.**]—*Bull. Off. internat. Epiz.* **36,** 181-196. [English summary.] **1746**

A comprehensive review of the properties of *Rickettsia burneti* and the methods of diagnosis of Q fever in man and in animals. Attention is drawn to the persistence of *Rickettsia* in ticks and in milk and butter; the heavy infection of embryonic membranes which makes parturition and abortion of infected animals dangerous for attendants; intraperitoneal injection of infective material allows microscopic demonstration of rickettsia in the tunica vaginalis: serological tests are reliable in g. pigs and probably also in man, but in sheep and goats even heavy excretors may be serologically negative: an allergic reaction seems to promise well for diagnosis.—A. MAYR-HARTING.

MANTOVANI, A. (1950). Ricerche sulla tecnica della fissazione del complemento nella febbre Q. [**Complement fixation test in Q fever.**]—*Proc. 4th. Congr. Soc. Sci. Vet., Milano.* pp. 3-15. **1747**

H. found that to avoid non-specific positive reactions in the complement-fixation test for *Rickettsia burneti* infection the serum had to be left in contact with the antigen and the complement for 12–18 hours at 3° to 5°C., readings being made at least half an hour after lysis of the controls.—L. BADIALI.

MIRRI, A. (1951). La fièvre Q chez les animaux en Italie. Le diagnostic allergique. [**Q fever in animals in Italy. Diagnosis by allergic tests.**]—*Bull. Off. internat. Epiz.* **36,** 197-202. [English summary.] **1748**

M. has carried out complement-fixation tests for Q fever on thousands of animals in Sicily. Cows, goats, sheep and dogs gave more than 30% positive reactions; a few horses, pigs and geese were also positive. All ticks from positive reactors were stated to be negative for rickettsia. The greatest number of human infections occurred in conexion with parturition or abortion of infected animals. Allergic tests (subcutaneous injection of the antigen into the lower eyelid), were tried on a large scale and seemed to correspond well with the complement-fixation test.

—A. MAYR-HARTING.

GIROUD, P. & LE GAC, P. (1950). Test d'hypersensibilité à l'antigène de la fièvre Q chez des sujets d'Oubanghi-Chari (Afrique équatoriale française) ayant présenté une affection exanthématique s'accompagnant d'adénopathies et de signes de stase pulmonaire. [**Hypersensitivity of Africans of French Equatorial Africa to Q fever antigen.**]—*C.R. Acad. Sci., Paris.* **230,** 1803-1805. **1749**

In Feb. 1949 three strains of *Rickettsia burneti* were isolated in g. pigs from the blood of patients with fever, exanthema and adenopathy—a syndrome known since 1921 in French Equatorial Africa and previously called "fièvre rouge congolaise". One of these strains produced a febrile illness with punctiform exanthema in monkeys. Intradermal injection of 0·1 ml. of antigen (prepared from the yolk sac of infected eggs or from the organs of infected rats or g. pigs) into human patients 15 days to one year after recovery from this febrile infection gave a positive hypersensitivity reaction up to six months after clinical recovery.—F.E.W.

VICTOR, J., RAYMOND, R., VALLIANT, J., WAGNER, J. C. & POLLACK, A. D. (1952). **Studies on opsonins in Q fever.**—*J. exp. Med.* **95,** 61-70. **1750**

A quantitative opsonin test for Q fever is described and compared with the complement-fixation test in normal, vaccinated and infected human beings.—IAN DAVIDSON.

BLANC, G. & BRUNEAU, J. (1949). Un réservoir de virus de la Q. fever en Algérie, la tique bovine Hyalomma mauritanicum. [**A reservoir of Q fever in Algeria,** *Hyalomma mauritanicum.*]—*Bull. Acad. Méd. Paris.* **133,** 115-117. **1751**

H. mauritanicum is a reservoir of Q fever although the organisms did not appear in the g. pig on primary inoculation. The authors say that all the species of *Hyalomma* in North Africa can act as reservoirs.

—JAS. G. O'SULLIVAN.

BLANC, G., JOYEUX, C. & BRUNEAU, J. (1951). Observations sur les larves de *Trombicula autumnalis* (Shaw) dans le centre de la France. Recherches sur leur rôle possible dans la transmission de la maladie de Derrick-Burnet (Q. fever). [**Larval harvest mites in France and their possible role in transmission of Q fever.**]—*Arch. Inst. Pasteur, Maroc.* **4,** 314-325. **1752**

Three g. pigs were inoculated with *Rickettsia burneti* and then exposed to larvae. These were crushed in saline and inoculated into two healthy g. pigs and although rickettsia were demonstrated, it was not established if the larvae were anything more than transport hosts.

—JAS. G. O'SULLIVAN.

LIEBERMEISTER, K. (1950). Schlachthofepidemien durch Q-Fieber. [**Q fever epidemics in abattoir personnel.**]—*Mh. prakt. Tierheilk.* **2,** 237-242. **1753**

The largest epidemic of Q fever occurred in Stuttgart, involving more than 100 persons between Oct. 1949 and Jan. 1950.

—W. R. BETT.

ROBBINS, F. C. & ENDERS, J. F. (1950). **Tissue culture techniques in the study of animal viruses.**—*Amer. J. med. Sci.* **220,** 316-338. **1754**

This review includes a table giving the methods of cultivation used successfully for mammalian viruses and appropriate references to the literature for each virus. Criteria for multiplication, methods of demonstrating virus in culture, factors influencing growth, and suggestions for further work are discussed.

—E. G. WHITE.

HENLE, W. (1950). **Interference phenomena between animal viruses: a review.**—*J. Immunol.* **64,** 203-236. **1755**

A review of the known data to date, made with the object of formulating general principles arising from these. The term interference is restricted to the antagonistic effect produced by one virus on the propagation of another. Animal viruses only are dealt with. An attempt is made to analyse the phenomena as observed between two fully active agents. Interference between inactivated and active viruses is studied with special reference to the influenza virus chick embryo system. The practical implications are briefly summarised. It is concluded that the phenomenon is closely related to virus metabolism and blockage effects within the cell itself.

—G. V. LAUGIER.

SAWA, I., SHIBUKI, M. & TAKEUTI, S. (1950). A propos de la durée minima nécessaire d'incubation du mélange de virus et d'immunsérum dans la réaction de neutralisation. [**The minimum time necessary for neutralization of virus in serum-virus mixtures.**]—*Jap. J. exp. Med.* **20,** 689-697. [In French.] **1756**

The highest dilution of antiserum to neutralize a *Bact. coli* phage after prolonged incubation was found to be 10^{-1}. Longer incubation increased possible dilution. Rift Valley fever virus on the other hand gave no significant result.—G. V. LAUGIER.

See also absts. **1573** (bacteriophage typing of staphylococci); **1651** (book, virology); **1653** (reappearance of trypanosomiasis after rinderpest immunization); **1918** (report, New Zealand); **1919** (report, India); **1920-1921** (reports, Pakistan); **1923** (report, Nigeria); **1925** (report, colonial research); **1927** (report, Bechuanaland); **1928** (report, Nyasaland); **1929** (report, Trinidad & Tobago); **1930** (report, Hong Kong); **1931** (report, Sweden); **1932-1933** (reports, U.S.A.).

IMMUNITY

I. ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., ROY, J. H. B., WALKER, D. M., BRIGGS, C. & LOVELL, R. (1951). **The nutritive value of colostrum for the calf. 4. The effect of small quantities of colostral whey, dialysed whey and 'immune lactoglobulins'.** —*Brit. J. Nutrit.* **5,** 171-176. [Authors' summary slightly modified.] **1757**

II. ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., ROY, J. H. B., WALKER, D. M., BRIGGS, C. & LOVELL, R. (1951). **The nutritive value of colostrum for the calf. 5. The effect of prepartum milking.**—*Ibid.* 343-349. [Authors' summary copied *verbatim.*] **1758**

III. BRIGGS, C. (1951). **The nutritive value of colostrum for the calf. 6. The 'K' antigens of** *Bacterium coli.*—*Ibid.* 349-355. [Author's summary slightly modified.] **1759**

IV. BRIGGS, C., LOVELL, R., ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., ROY, J. H. B., THOMPSON, S. Y. & WALKER, D. M. (1951). **The nutritive value of colostrum for**

the calf. 7. Observations on the nature of protective properties of colostrum.—*Ibid.* 356-362. [Authors' summary copied *verbatim*. For prevoius parts see *V.B.* **20,** 1701-1703.] **1760**

I. Shorthorn bull calves, grouped in two experiments, each of eight blocks, were given separated colostrum, or fractions of it, in the first 12 hours of life, followed for 3 weeks by a standard diet based on dried skim milk. One calf in each block was deprived of colostrum. All calves deprived of colostrum died. Twenty-five of forty calves given small quantities of separated colostrum, whey, dialysed whey or 'immune lactoglobulins' survived. These diets did not, however, prevent the calves from scouring and the calves did not gain weight normally. There was a significant difference between the mortality rate of calves deprived of colostrum and that of calves receiving the colostral fractions. There was no significant difference between the performances of the surviving calves that received the colostral fractions.

II. Eighteen newborn Shorthorn bull calves, grouped in six blocks, were given normal colostrum, milk, or the secretion produced after parturition by cows premilked for 14 days. These diets were fed during the first 24 hr. of life and thereafter the calves were reared for 3 weeks on a standard diet based on dried skim milk. All calves given normal colostrum survived, whereas three given the secretion after prepartum milking, and two given milk, died. There were no significant differences between the frequencies of scouring of calves on the three treatments, or between the mean live-weight gains of calves given milk and the secretion produced at parturition after prepartum milking. The mean live-weight gain at 14 and 21 days, adjusted for birth weight, of calves that had received normal colostrum was significantly greater than that of calves on the other two treatments.

III. Strains of *Bact. coli* were recovered from calves that had had white scours. Serological examination provided evidence that the 'K' antigens and the pathogenic activities of strains were related. There was a close relationship between the results of 'K' antigen-antibody agglutination tests, precipitin tests using as antigens alkali extracts of strains, and protection tests in mice. Serological classification of coliform organisms demonstrated the spread of potentially pathogenic strains from calf to calf during epidemics of white scours.

IV. Whey samples prepared from colostrum were examined for agglutinins against the 'K' and 'O' antigens of *Bact. coli,* and those samples containing agglutinins against the 'K' antigens protected mice against the corresponding strains of *Bact. coli.* Samples of colostrum given to calves that died in an epidemic of colibacillosis did not contain agglutinins against the 'K' antigens of the strains of *Bact. coli* isolated from the dead calves.

In another experiment, protein fractions of colostrum given to 15 calves that survived contained, in most cases, demonstrable agglutinins against the 'K' antigens of strains of *Bact. coli* recovered from contemporary calves that had died in the same environment.

The evidence at the moment is incomplete, but it supports the contention that the protective mechanism of colostrum is largely an immunological one and that it is associated, in colibacillosis, with the possession of antibodies to the 'K' antigens of the infecting strains of *Bact.* coli.

Halpern, B. N., Mauric, G., Holtzer, A. & Briot, M. (1951). Influence de la cortisone sur la recharge en anticorps après l'injection déchainante chez le lapin sensibilisé à l'ovalbumine. **[Influence of cortisone on antibody formation in rabbits.]**—*Acta Allerg.* **4,** 207-222. [In French.] **1761**

Injection of ovalbumin induces a greater production of antibody during the first three days in rabbits treated with cortisone than in control animals, but the antibody after three days is least in the cortisone-treated rabbits, because of an inhibition by the cortisone upon the neo-formation of antibody.—F. R. Harris.

Doladilhe, M., Legrand, P., Mazille, M. & Tourneur, C. (1951). On ne trouve pas, dans les agglutinines, les caractères immunologiques de la globuline. **[The immunological characteristics of globulin are not found in agglutinins.]**—*C.R. Acad. Sci., Paris.* **233,** 460-462. **1762**

Experiments, carried out on g. pigs were briefly described; the immunological characteristics of globulin were not found in agglutinins. —G. Davies.

Spielmann, W. & Schmitt, G. (1950). Über die Gewinnung und Verwendbarkeit von Anti-O-Rinderserum. **[Production and use of anti-O cattle serum.]**—*Z. Hyg. Infektkr.* **131,** 393-406. **1763**

Out of 78 cattle sera tested for anti-O agglutinins, four were found which after absorption with A_1B red blood corpuscles contained specific anti-O agglutinins. A detailed examination of two of these sera showed that anti-O sera can be used for the demonstration of A_1A_2 compon-

ents. A group specific component could not be demonstrated in the anti-O sera.

—J. A. NICHOLSON.

LAZUGA, K. (1951). Badania nad leukergią u bydła i świń. **[Studies on leukergy (tendency of leucocytes to clump) in cattle and pigs.]**—*Med. weteryn.* **7**, 592-593. [English and Russian summaries.] **1764**

In infectious disease leucocytes have a tendency to clump almost immediately after the sample is taken. This process involves 60–80% of leucocytes. This phenomenon does not take place in normal blood. Leukergy as an inflammatory phenomenon will not reveal the presence of organisms but will show imflammatory changes so small that no other test would reveal them. In cattle leukergy is observed only in acute conditions. The author suggests the usefulness of leukergy in the detection of diseases, especially latent infections, prior to slaughter.

—J. R. MITCHELL.

KAPLAN, M. M. (1949). **Agglutinated erysipelas antigen in the hyperimmunization of horses.** —*F.A.O. Agric. Studies.* No. 10. pp. 8-10. **1765**

The losses from endocarditis and arthritis in horses used for serum production are diminished by using subcutaneous inoculations containing the sediment obtained by agglutinating broth cultures of swine erysipelas with hyperimmune serum.—K. G. TOWERS.

See also absts. **1580** (anthrax vaccine); **1586-1591** and **1594-1595** (B.C.G.); **1593** (TB.); **1618** (*S. pullorum* agglutination); **1627** (*Brucella* antibodies); **1630** (*Brucella* antigens); **1653** (rinderpest immunization and trypanosomiasis); **1657** (dourine); **1670** (coccidiosis); **1676** (*Plasmodium* infection); **1678** (equine piroplasmosis); **1689-1693** (F. & M. disease); **1699-1703** (rabies); **1705** (cow pox); **1707** (fowl pox); **1715** (equine infectious anaemia); **1721** (bluetongue); **1729-1731** (distemper); **1735-1736** (cultivation of canine hepatitis virus); **1742** (Newcastle disease); **1747-1753** (Q fever); **1891** (demonstration of local antibodies in the vagina).

PARASITES IN RELATION TO DISEASE [GENERAL]

KOFFMAN, M. & OLSSON, L. (1951). Hästens inälvsparasiter och deras bekämpande. **[Control of helminth infestation and of *Gastrophilus* larvae in horses.]**—*Nord. Vet.-Med.* **3**, 312-326. [In Swedish. English and German summaries.] **1766**

A general account of the intestinal parasites which occur in horses in Sweden, with an account of their life histories and of treatment and control methods. The main parasites dealt with are *Gastrophilus equi, Anoplocephala* spp., strongyles, *Trichonema* spp., *Strongyloides westeri* and *Oxyuris equi.* Mention is made of other *Gastrophilus* spp., of *Habronema* spp., *Trichostrongylus axei, Setaria equina, Onchocerca* spp. and *Thelazia* which are less common.

Phenothiazine was used successfully against strongyles and *Trichonema* without toxic effect in 116 horses of varied age groups at a dose rate of 2 g. daily in three series each for a period of 20 days at intervals of ten days. Preliminary tests of sodium fluoride indicated that it might be superior to phenothiazine, but no details were given.—F.E.W.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

LANCASTER, J. L., JR. (1951). **One application control for cattle lice.**—*J. econ. Ent.* **44**, 718-724. [Author's summary modified.] **1767**

Three seasons' work on louse con rol in dairy herds in New York are reported herein. Of the materials tested only 0·25% chlordane gave fully satisfactory seasonal control with one application. Lindane [γ-benzene hexachloride] and rotrate [wettable 5% rotenone and other cube resins] at 0·03 and 0·125% respectively when applied twice at an interval of 11 days gave fully satisfactory to fairly satisfactory control. Pyrenone [contains petroleum oil, polyoxyethylene sorbitol mixed ether ester, technical piperonyl entoxide 10%, pyrethrins 1%] at one application was unsatisfactory. In no instance were there any toxic effects from the materials as used nor any ill effects from spraying dairy cows in the barn during winter.

SERGENT, E. (1951). Les varrons et la croissance des bovins. **[Effect of warbles on the growth of cattle.]**—*Arch. Inst. Pasteur, Algér.* **29**, 196-199. **1768**

There was no significant effect on weight increase in 12 animals which had from 0 to 430 larvae of *Hypoderma bovis.*

—JAS. G. O'SULLIVAN.

MILLER, M. J. & LOCKHART, J. A. (1950). **Hypodermal myiasis caused by larvae of the ox-warble** (*Hypoderma bovis*).—*Canad. med. Ass. J.* **62**, 592-594. **1769**

An account of a case of myiasis caused by *H. bovis* in a boy. Third stage larvae were recovered from lesions.—R. GWATKIN.

LEVENBOOK, L. (1950). **The composition of horse bot fly** (*Gastrophilus intestinalis*) **larva blood.**—*Biochem. J.* **47**, 336-346. **1770**

Fructose, glutamine and a phenolic amino acid were present in the blood of *Gastrophilus* larvae. Osmotic pressure was maintained by amino acids.—JOHN SEAMER.

BRAZÃO, L. N. & DE SOUSA, J. L. (1950). "Gasterofilose em canino." [*Gastrophilus* **larvae in a dog.**]—*Rev. Med. vet., Lisboa.* **45,** 25-28. **1771**

A dog affected with intermittent nervous attacks was thought to be suffering from parasitism and was treated with a preparation of chenopodium. Thereafter, it passed several specimens of an unidentified species of *Gastrophilus*. The nervous attacks ceased after treatment. There was a history of contact with horses during the first six months of the dog's life.—I. W. JENNINGS.

KOSTICH, D. Y. (1951). **Source determination of blood meal in sand flies (Phlebotominae) in Yugoslavia (Dobricky county). 2760 haemoprecipitin tests.**—*Acta trop.* **8,** 131-135. [In English. Abst. from author's summary] **1772**

In a study of kala-azar precipitin tests were carried out on 460 females of *Phlebotomus* species from affected villages. It was found that *P. papatasi* and *P. perfiliewi* had mostly ingested human blood; *P. major* and *P. chinensis* var. *simici* had mostly ingested animal blood (dog, horse, cattle, pig and sheep). Blood in 24 out of the flies was not identified; it might have been from birds, reptiles or small rodents.

ENIGK, K. (1947). Zur Kenntnis der Zeckenfauna von Süd—und Osteuropa. [**The ticks of the south and east of Europe.**]—*Mh. Vet.-Med.* **2,** 75-81. **1773**

Ticks have been collected from horses and other domestic animals in 551 areas of south and east Europe. Amongst the large collection the following 11 species were recorded: *Hyalomma marginatum, H. anatolicum, H. volgense, H. uralense, Rhipicephalus bursa, R. sanguineus, Dermacentor pictus, D. marginatus, Ixodes ricinus, Boophilus calcaratus,* and *Haemaphysalis punctata.*

Data are given of the geographical distribution of each species and the date of the collection of each specimen, together with the seasonal appearance, particularly of adults. A knowledge of the latter is of some importance in a study of the epidemiology of tick transmitted diseases.
—M. L. CLARKE.

VYAZKOVA, S. F. (1950). [**Control of tick-borne protozoan infection by the use of the parasiticide "SK-9".**]—*Veterinariya, Moscow.* **27,** No. 3. pp. 14-17. **1774**

In field trials made in 1949 on cattle with infestations of *Boophilus, Hyalomma, Rhipicephalus* and occasionally *Dermacentor* and *Ixodes* spp., a 3% solution of "SK-9" was applied to the skin of 1,057 cattle by rubbing in, and to 2,347 by dipping in a 1% solution, the treatment being repeated every 10 days in summer and every 15 days at other seasons. The infestation was controlled and none of the animals developed protozoan infections. Of 244 undipped, three developed piroplasmosis. "SK-9" contains highly chlorinated oil of turpentine with some unstated emulsions added.
—F.A.A.

See also absts. **1751-1752** (arthropod Q fever reservoirs); **1917** (report, Australia); **1918** (report, New Zealand); **1922** (report, Basutoland); **1926** (report); **1927** (report, Bechuanaland); **1928** (report, Nyasaland).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

CABALLERO y C., E. & VOGELSANG, E. G. (1949). Fauna helmintologica venezolana. II. Algunos trematodos de aves y mamiferos. [**Venezuelan helminths. II. Some trematode parasites of birds and mammals.**]—*Rev. Med. vet. Parasit., Caracas.* **8,** 43-65. **1775**

An account of trematodes found in the turkey buzzard, the opossum and other wild fauna.
—I. W. JENNINGS.

PAUTRIZEL, R., RIVASSEAU, J. & RIVASSEAU, D. (1951). Injection d'extrait de douve et éosinophilie sanguine chez le mouton douvé. [**Effects of injection of extracts of liver flukes on eosinophiles in infected sheep.**]—*C.R. Soc. Biol., Paris.* **145,** 720-721. **1776**

Intradermal injection of extracts of adult *Fasciola* into sheep infected with *F. hepatica* caused two elevations of eosinophiles, the peak of the first occurring after seven hours, and of the second after 24 hours.
—JAS. G. O'SULLIVAN.

MANSOUR, T. E. (1951). **A study of the action of antimonial compounds on the liver fluke** (*Fasciola hepatica*) *in vitro.*—*Brit. J. Pharmacol.* **6,** 588-592. [Author's summary modified.] **1777**

The effects of antimonial compounds on preparations of *F. hepatica* have been recorded kymographically. Both Ringer's solution and a mixture of equal volumes of bovine serum and Ringer's solution were used as media for these *in vitro* tests for a maximum period of 90 min.

Tarter emetic, fouadin (antimony pyrocatechol sodium disulphonate), and neostibosan (diethylamino-*p*-aminophenyl stibinate) all failed to cause paralysis of rhythmical movement in a saline medium in a concentration of 1 : 1,000. Serum was found to initiate a lethal response to tarter emetic, but not to fouadin or neostibosan. The fraction of serum responsible for this action was found to be dialysable through cellophane membrane against distilled water, but not against saline.

KIKUCHI, S. (1945). **[Studies on schistosomiasis. Observation on cases of the natural placental infection.]**—*Jap. J. vet. Sci.* 7, 19-28. [English summary.] 1778

Some infected new-born calves become ill-nourished and pass bloody faeces containing large numbers of schistosome eggs. Twenty-one calves from cows with schistosome infestation were examined and it was found that they had become infected by the placental route. Details are given of the results of a P.M. examination on one infected calf; there was ulceration in the rectal mucous membrane with haemorrhage and tissue proliferation, eggs being very numerous in the lesions. There were nodules in the liver and adult worms were present in the veins of the rectal mesentery.

Four adult worms were found in the alimentary canal and liver of a seven-month-old foetus of an infected cow, and eggs were present in the rectal mucosa of the foetus. Three affected cows are stated to have been completely cured by anthelmintic treatment, their calves, however, being infected when born.—KOGI SAITO.

WILLMOTT, S. & PESTER, F. R. N. (1951). **Preliminary account of an investigation into the paramphistomes of cattle and sheep in the Republic of Ireland.**—*Irish vet. J.* 5, 198-200. 1779

In an investigation to determine the incidence and possible pathogenicity of paramphistomes, examination of the rumen and reticulum of cattle examined, revealed an overall incidence in bullocks and cows of 9·7%, most having less than 100 paramphistomes. No infestation was observed in sheep or bulls. This is a preliminary account.—R. A. HUCK.

ALLEN, R. W. (1947). **The thermal death point of cysticerci of *Taenia saginata*.**—*J. Parasit.* 33, 331-338. [Author's summary modified.] 1780

In a series of experiments to determine the thermal death point of the cysticerci of *T. saginata*, the cysticerci were exposed to various temperatures, attained gradually, and were then tested for viability by the use of one or all of the following criteria: ability to evaginate in warm sodium taurocholate solution, activity of flame cells, and ability to pass through the digestive tract of man without being digested.

Decapsulated cysticerci heated to temperatures as high as 54°C. evaginated partially in sodium taurocholate solution and showed active flame cells in some cases. A small percentage of those heated to 55°C. evaginated partially in taurocholate solution, did not show active flame cells, and were completely digested when passed through the digestive tract of a human subject.

Cysticerci that were heated in muscle tissue to temperatures as high as 50°C., evaginated in taurocholate solution, and showed active flame cells. A small percentage of those heated to 55°C. evaginated partially, but none showed active flame cells. Three out of six were not, however, completely digested when passed through the digestive tract of a human subject. Cysticerci heated gradually in muscle tissue to temperatures of 56°C. did not respond in taurocholate solution, did not show active flame cells, and were digested when passed through the digestive tract of a human subject.

ANON. (1951). L'échinococcose en Alaska L'importance des rongeurs comme hôtes intermédiaires. **[Rodents as intermediary hosts of echinococcosis in Alaska.]**—*Pr. méd.* 59, 321. 1781

Echinococcosis occurs in domestic and wild Canidae in Alaska. Of 385 fieldmice examined 2% were infested with hydatid cysts. The mice probably constitute an important source of infestation.—JAS. G. O'SULLIVAN.

KINGSCOTE, A. A. (1950). La trichinose dans la région arctique boréale. **[Trichinosis in Canadian Arctic regions.]**—*Bull. Off. internat. Epiz.* 34, 221-222. 1782

A brief discussion on the incidence of trichinosis in pigs in the U.S.A. and Eastern Canada, in human beings in Ontario, and in various animals and human beings in Greenland, Northern Quebec and the North-West territories. K. found that foxes and American mink raised on fur farms were unaffected.

—JAS. G. O'SULLIVAN.

TODD, A. C. (1952). **Continuous phenothiazine therapy for horses. IV. The third year of treatment.**—*Vet. Med.* 47, 25-26. 1783

Up to 4 g. of phenothiazine given daily with the feed for up to three years produced no ill effects upon four mares: strongyles were usually well controlled.—R. MARSHALL.

MAYHEW, R. L. (1951). **Studies on bovine gastro-intestinal parasites. XVIII. Some results of feeding small amounts of phenothiazine on pure infections of the nodular worm,** *Oesophagostomum radiatum.*—*Proc. helminth. Soc. Wash.* **18,** 70-77. [Abst. from author's summary. For previous parts, see *V.B.* **11,** pp. 168 & 375; **12,** p. 39; **13,** 365, and **21,** 1413-1417.] **1784**

Of four calves with pure infestations of *O. radiatum,* fed 1·5 g. phenothiazine daily for six days eggs disappeared altogether from the faeces of three and the fourth required a second dosage to eliminate the eggs. In four experiments in which 1·5 g. phenothiazine were fed daily for 14 days all faecal cultures yielded negative results. In two experiments in which 0·5 g. was fed daily for 14 days the eggs were eliminated from the faeces.

Faecal cultures became negative in 3–14 days after the first feeding and remained negative for 24–93 days, the second period of egg production being relatively low as compared with the first.

Abnormal eggs appeared in the faeces 10–16 hours after the first feeding of phenothiazine, abnormalities consisting of failure to divide, unequal divisions, and a brownish coloration of the cytoplasm.

Cultures made prior to and during the feeding of the phenothiazine invariably contained infective larvae up to the days on which abnormal eggs were first detected in the faecal samples. Following the time of appearance of abnormal eggs, the cultures, with a few exceptions, were free from larvae.

ROBERTS, F. H. S. (1951). **Parasitic gastro-enteritis of cattle, with particular reference to the occurrence of the disease in Queensland.** —*Aust. vet. J.* **27,** 274-282. [Author's summary modified.] **1785**

The important species of helminths associated with parasitic gastro-enteritis of cattle in Queensland include *Haemonchus contortus, Bunostomum phlebotomum, Cooperia punctata, C. pectinata* and *Bosicola* (*Oesophagostomum*) *radiatum.* The disease is seen mainly in young animals and is most prevalent during the autumn to early spring period of the year. Geographical distribution is discussed.

Observations are reported on the epidemiology of the disease. Seasonal fluctuations in the populations of the adult helminths and their relationship to the season of birth of the calf and to rainfall and temperature are discussed. Cattle develop a resistance to infestation during the first 18 months or so of life. This resistance appears to be maintained throughout the remainder of the animal's existence.

Outbreaks occur under conditions of a high larval prevalence and a lowered nutritional standard. The animal is unable to prevent heavy infestations from being established, and its inadequate nutrition makes it very susceptible to the effects of parasitism.

The control of the disease is discussed in respect of such factors as the importance of season of birth, pasture management, calf-pen hygiene, overcrowding, permanent pastures, resistance to infestation, nutrition and treatment.

BORCHERT, A. (1950). Die Lungenwurmseuche der Haustiere. [**Lungworm infestation of domestic animals.**] pp. 22. Leipzig: S. Hirzel. Merkblatt No. 4. **1786**

A general account, written for students, of the lungworms of the ox, sheep, horse, pig, dog, cat and fox and of the disease in these hosts. Therapy is discussed.—M. L. CLARKE.

DURBIN, C. G. & HONESS, R. F. (1951). **A new roundworm,** *Nematodirus rufaevastitatis* **(Nematoda: Trichostrongylidae) from domestic sheep,** *Ovis aries,* **in Wyoming.**—*J. Wash. Acad. Sci.* **41,** 179-180. [Abst in *Helminth. Abstr.* **20,** 55-56. (1951), copied *verbatim.*] **1787**

Nematodirus rufaevastitatis n.sp. from domestic sheep in the Red Desert area, Wyoming, and in western Wyoming closely resembles *N. spathiger* in the termination of the spicules. A key to the nine species in ruminants shows that *N. rufaevastitatis* differs from known forms in the size of the bursa which measures 0·25 mm. to 0·34 mm. from base to tip, and in the non-bifid tip of the dorsal ray.

FEOKTISTOV, P. I. (1950). [**Epidemiology and prophylaxis of ascariasis in fowls.**]—*Veterinariya, Moscow.* **27,** No. **4.** pp. 11-16. **1788**

It was found that the ability of the nematode, *Ascaridia lineata* [*galli*], to survive depends largely on climatic factors. The eggs do not develop in temperatures below 17°C., but they remain viable for considerable periods, including survival under snow through the continental winter. Temperatures of above 40°C. prevent hatching and 45°C. is lethal. Relative humidity 90–100% is necessary; humidity below 90% is fatal; but in the second stage of development they survive in humidities down to 60%. In the summer 25–35% of all eggs hatch provided they remain in the shade, either in the soil or in droppings 4–5 cm. thick. F. emphasized the need for preventive measures.—F.A.A.

NISHIYAMA, S. (1945). **[Habronema larvae.]**—*Jap. J. vet. Sci.* **7**, 41-49. [German summary.] **1789**

Three species of *Habronema*: *H. muscae*, *H. microstoma*, and *H. megastoma* were collected P.M. from horses. Eggs and larvae of flies from cattle dung [presumably *Musca* or *Stomoxys*] were bred and the progeny were infested with embryos of each species of *Habronema* separately. The development of the larval worms was examined in the hatched flies. In *H. muscae* and *H. microstoma* there were no progressive morphological changes at the 3rd to the 5th developmental stages, and they could not be differentiated. In the larvae of *H. megastoma*, however, during these stages a funnel shaped mouth cavity and a constriction of the neck began to appear, which made differentiation between the larvae of this worm and of the other two possible.—KOGI SAITO.

KUME, S. & ITAGAKI, S. (1949). **[Studies on *Dirofilaria immitis*. III. Prevention.]**—*Jap. J. vet. Sci.* **11**, 53-61. [Abst. from English summary. For previous parts, see *V.B.* **22**, 1411 & 1412.] **1790**

By administering antimonial preparations to susceptible hosts during the mosquito season, the authors report that the parasites were destroyed before they could become established in the heart.—JAS. G. O'SULLIVAN.

SHCHERBOVICH, I. A. (1950). **[*Macracanthorhynchus hirudinaceus* in pigs.]**—*Veterinariya, Moscow.* **27**, No. 4. pp. 6-11. **1791**

A discussion on *M. hirudinaceus* infestation in pigs, with emphasis on protective measures particularly the prevention of the ingestion of the may-bug, *Melolontha* spp., and the bronze beetle, *Cetonia aurata*, the intermediate hosts of the worm. The measures emphasized are: nose ringing of pigs allowed on pasture; keeping pigs off infected pig-runs for four years; ploughing in spring of infected land; and disinfestation of manure and litter.—F.A.A.

See also absts. **1910** (counting ova); **1917** (report, Australia); **1922** (report, Basutoland); **1932** (report, U.S.A.); **1936** (book, soil and nematodes).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

RUSSELL, W. O. & LOQUVAM, G. S. (1951). **Squamous carcinoma of the conjunctiva and cornea of bovines ("cancer eye") of cattle.**—*Amer. J. Path.* **27**, 727-728. [Only abst. given. Abst. from abst.] **1792**

An account of the examination of 308 affected eyes from slaughtered Hereford cattle. There was no significant sex difference in incidence of carcinoma, and the incidence of the various degrees of pigmentation of the lids was roughly that seen normally in Herefords. The neoplasm was primary on the cornea in 50% of cases, on the conjunctiva of the lid in 22%, on the nictitating membrane in 17%, and of uncertain origin in the remainder. In 15%, metastasis had occurred to the homolateral parotid lymph node. In most cases, the carcinoma appeared to have developed from a previously-existing squamous papilloma; this might support a suggestion of virus aetiology.

—E. COTCHIN.

SOKOLOFF, B., EDDY, W. H. & REDD, J. B. (1951). **Flavonoids in experimental cancers.**—*Arch. Path.* **52**, 215-220. [Abst. from authors' summary.] **1793**

The flavonoid compound [similar to vitamin P] given to rat bearers of Carcinoma 175-G and Crocker Rat Carcinoma and to mice bearers of Sarcoma 180 in a total dose of 40, 100, and 200 mg. per 100 g. body weight, respectively, produced a moderate inhibitory effect on tumour growth; administered in these doses to normal animals it had no toxic effect; when given to adrenalectomized rats in a daily dose of 5 mg. per 100 g. body weight their life span was prolonged.

MAZZETTI, R. (1951). Leucosi dei polli. **[Leucosis in fowls.]**—*Zooprofilassi.* **6**, 200-203. **1794**

According to M., it is almost impossible to classify the leucosis group of diseases on an aetiological basis. Nevertheless he traces the following general scheme of principal leucosis complexes: (a) lymphomatosis (nervous, ocular, visceral, osteopetrotic), (b) erythroblastosis.

—M. BERTANI.

PETZETAKIS, M. (1951). Méningo-encéphalite expérimentale du lapin après injection intracérébrale de produits leucémiques aprés filtration. Présence de corpuscles intracellulaires dans le cerveau. **[Experimental meningo-encephalitis in rabbits after intracerebral injection of filtered suspensions of leucosis material.]**—*Pr. méd.* **59**, 388-389. **1795**

The author has previously described the occurrence of meningo-encephalitis in rabbits inoculated intracerebrally with unfiltered

material from human leucosis lesions. Material heated to 56–58°C. before inoculation failed to produce the experimental disease. The present paper records similar results with filtered leucosis material, but the incubation period was longer and the symptoms less severe. The condition could be transmitted serially and impression smears of the rabbit brains showed cytoplasmic inclusions within phagocytic and endothelial cells.—E. G. White.

NUTRITIONAL AND METABOLIC DISORDERS

Leonhardt, H. (1951). Fütterung und Tetanie der Schweine. **[Nutrition and tetany in pigs.]** —*Mh. Vet.-med.* **6**, 192-193. **1796**

Pigs are more liable to develop tetany on diets poor in protein than on those containing an excess.—N. Dean.

Randoin, L., Susbielle, H. & Fournier, P. (1951). L'absorption intestinale du calcium au cours du rachitisme expérimental du rat. **[Intestinal calcium absorption in experimental rickets in rats.]**—*C.R. Acad. Sci., Paris.* **232**, 553-555. **1797**

The urinary and faecal calcium was determined in two groups of rats, one rachitic and the other normal. Inert titanium oxide was added to the diet and using the Ca : Ti O_2 ratio as a basis of assesment, it was concluded that the increased faecal calcium seen in rachitic rats was due to failure of absorption and not to an increased excretion of endogenous calcium and that the action of vitamin D was to facilitate calcium absorption.—J. A. Nicholson.

Baumann, R. & Pommer, A. (1951). Spätrachitis beim Hund. **[Rickets in dogs.]**—*Wien. tierärztl. Mschr.* **38**, 353-359. [English, French and Italian summaries.] **1798**

The authors described late rickets in a dog, which died from pneumonia following distemper.—E. Walliczek.

Fohlin, P. (1947). D-vitaminbehandling vid acetonämi och andra bristsjukdomar hos nötkreatur m. m. **[Treatment with vitamin D of acetonaemia and other deficiency diseases in cattle, etc.]**—*Svensk VetTidskr.* **52**, 143-148. **1799**

F. found that a 10 ml. dose of "vigantol", a concentrated vitamin D preparation injected intravenously 7–14 days before calving prevented the occurrence of puerperal paresis in high-yielding cows which were subject to repeated attacks. He stated that there was a remarkably low incidence of deficiency disease among the 2,000 "evacuated" Finnish cattle "billeted" in his district, during the second world war as compared with those "billeted" in other parts of Sweden. The Finnish cattle had been fed lichen, rich in vitamin D during the winter in northern Finland and F. therefore provided for their vitamin D requirements while they were under his supervision.

The aetiology of acetonaemia was also discussed. F. postulated a vitamin D deficiency. He claimed to have cured two severe cases by intravenous injection of 10 ml. "fortedol" (a vitamin D preparation) and subsequently 15 further cases. He considered that the dosage could be increased or even doubled for large breeds.—F. E. W.

Collentine, G. E. & Quick, A. J. (1951). **The interrelationship of vitamin K and dicoumarin.**—*Amer. J. med. Sci.* **222**, 7-12. **1800**

Using cholecystnephrostomized dogs vitamin K and dicoumarin were found to be mutually inhibitory; the evidence indicated that both were stored in the liver and had an affinity for the same enzyme. This enzyme regulates the blood level of prothrombin. Synthetic preparations had the same action as the vitamin.

—John Seamer.

Miura, Y. & Nakamura, Y. (1951). Action du cobalt sur la ribonucléase. **[The action of cobalt on ribonuclease.]**—*C.R. Acad. Sci., Paris.* **232**, 1874-1876. **1801**

Cobalt chloride at 0·001 M concentration inhibits the action of ribonuclease, preventing the utilization of ribonucleic acid in protein synthesis. Bacterial growth is thus prevented, even when ample nucleic acids are available. Effects are more marked with *Bact. coli* than with staphylococci.—F. R. Harris.

Anon. (1950). **Environmental temperature and the riboflavin requirement of pigs.**—*Nutr. Rev.* **8**, 336-339. **1802**

Earlier experiments by Mills, C. A. *et al.* (1943) had been interpreted as indicating that animals kept under temperature conditions simulating those of a tropical climate had increased requirements for thiamine and choline. These conclusions had been criticized as they did not take into account the fact that a high environmental temperature may reduce the quantity of food eaten and so the amount of vitamin ingested. Mitchell, H. *et al* (1950) studied the riboflavin requirement using pigs kept at a temperature of 85°F. and comparing them with pigs at 42°F. This experiment appeared to indicate that the pigs at the higher

temperature required less riboflavin. The results of this experiment are, however, open to doubt since the pigs used were not comparable: those at the lower temperature were smaller and of a different breed from those at the higher temperature. The question whether under the same environmental temperature conditions pigs with a body weight of approximately 30–35 lb. have the same riboflavin requirement as pigs with a body weight of 55–60 lb. has not been answered by this experiment.—M.C.

DESJARDINS, J. (1949). Revue bibliographique sur les relations entre la Vitamine B6 (Pyridoxine) et les protéines. [**Bibliography on the relation between vitamin B_6 (pyridoxine) and proteins.**]—*Rev. d'Oka.* **23,** 245-267. **1803**

This comprehensive review with 85 references is part of a longer work by the same author. It describes the discovery, isolation, chemical and physical properties, symptoms of deficiency and different forms of vitamin B_6 (pyridoxine) before discussing its relation to the metabolism of the proteins and amino-acids, particularly tryptophane in rats, mice, pigs and dogs, its role in decarboxylation and transamination and further relations with the proteins. Finally there is a description of vitamin B_6 deficiency in farm animals.

—CHARLOTTE M. WOOD.

ANDERSON, J. O., COMBS, G. F., GROSCHKE, A. C. & BRIGGS, G. M. (1951). **Effect on chick growth of amino acid imbalances in diets containing low and adequate levels of niacin and pyridoxine.**—*J. Nutrit.* **45,** 345-360. [Authors' summary modified.] **1804**

Amino acid imbalances were produced in chick diets by the addition of 4% of single amino acids to diets low and adequate in niacin and pyridoxine in which the protein was furnished by 18% crude casein, 5% gelatin, and 0·3% DL-methionine.

The amino acids were divided into two groups on the basis of their effects on growth. One group included valine, tyrosine, phenylalanine, isoleucine, tryptophan, lysine, and methionine. The addition of these amino acids or mixtures of these amino acids to the chick diet depressed growth more than the other amino acids, and the growth depression was not greatly influenced by the addition of niacin to the diet. The other amino acids when added to the niacin-low diet caused a growth depression which was partly or entirely overcome by the addition of niacin to the diet.

The blood amino nitrogen level was increased by the addition of each amino acid except methionine, lysine, and arginine. Possible mechanisms by which the amino acids cause these effects are discussed.

BRAUDE, R., KON, S. K. & PORTER, J. W. G. (1950). **Studies in the vitamin C metabolism of the pig.**—*Brit. J. Nutrit.* **4,** 186-199. **1805**

No significant change in vitamin C concentration in the plasma and urine of sows, despite a high output in the colostrum and milk, was demonstrated before and at farrowing.

To determine the ability of unweaned pigs to synthesize vitamin C, pairs were given colostrum followed by goats' milk, one of each pair being deprived of vitamin C, and all grew satisfactorily. Those given vitamin C excreted approximately twice as much as those deprived, and maintained double the blood level. In both sets excretion was doubled or trebled in the first three weeks.

That piglets can synthesize vitamin C from birth was strongly indicated by the increase in the mean total vitamin C content of the deprived piglets, from 140 to 245 mg. in the first two weeks despite excretory and metabolic losses.

—K. MACFARLANE.

SMITH, E. L. (1951). **Vitamin B_{12}. Part I.** —*Nutr. Abstr. Rev.* **20,** 795-809. **1806**

After a brief discussion of the earlier work on vitamin B_{12}, S. described procedures used in its isolation; he discussed the chemistry of the substance and indicated a partial formula. Identification followed of a group of factors with vitamin B_{12} activity, their physical constants and stability, the preparation of radioactive vitamin B_{12} and bound forms of the vitamin. Non-biological and microbiological methods of estimation were described. The place of vitamin B_{12} in animal nutrition, its requirements by chicks, pigs, rats, mice, dogs and other mammals, its probable origin and distribution in nature were discussed. Finally information was given on the pharmacology and mode of action of the vitamin.—CHARLOTTE M. WOOD.

SWENSON, M. J. (1951). **Effect of a vitamin B_{12} concentrate and liver meal on the histopathology of chicks fed an all-plant protein ration.**—*Amer. J. vet. Res.* **12,** 224-229. **1807**

New Hampshire chicks were assigned to nine groups of ten, by a procedure used previously [Swenson (1951)]; three groups were given a basal all-plant protein diet, three a similar diet + liver meal and three basal diet + animal protein factor, details of the diets being given. After 12 weeks the chicks were killed and bled by decapitation and examined for gross and microscopic tissue changes. A

portion of the sciatic nerve was fixed and examined for myelin sheath degeneration. Thirteen other tissues were also stained. Various degrees of degeneration were observed in the myelin sheath of sciatic nerves. Fatty changes in the liver were most prevalent in chicks on animal protein factor (APF) but the presence of these fatty changes in the liver and kidney tubules might have been associated with choline deficiency. The chick caeca were unusually long, 7–11 in., but had no microscopic pathological changes.—MALCOLM WOODBINE.

LOUSSE, A. (1951). Le métabolisme de la vitamine C chez les ruminants. **[Vitamin C metabolism in ruminants.]**—*Ann. Med. vet.* **95**, 18-31. **1808**

A general account of the vitamin C requirements of ruminants. The observations so far made suggest that ruminants can synthesize vitamin C, particularly in the liver and mammary gland.—J. A. NICHOLSON.

BOYLE, P. E. & IRVING, J. T. (1951). **Skeletal muscle changes in scurvy with a note on the mechanism of the attachment of myofibrils to tendon.**—*Science.* **114**, 572-573. **1809**

The muscle histology in scorbutic g. pigs was described. The myofibrils are apparently continuous with the tendon fibrils of the muscular attachment.—P. H. HERBERT.

See also absts. **1757-1760** (colostrum); **1887** (dry rations and sterility in cattle); **1917** (report, Australia).

DISEASES, GENERAL

ROZA, M. (1951). Laporan tentang perdjalanan dines ke Bali dan kepulauan Sunda Ketjil. (Dari tanggal 20 Nopember 1950 sampai 20 Desember 1950.) **[Report of an official tour to Bali and the Lesser Sunda Isles.]**—*Hemera Zoa.* **58**, 302-320. [Abst. from English summary.] **1810**

An account of common infective diseases in the Lesser Sunda Isles—anthrax, haemorrhagic septicaemia, glanders, surra and F. & M. disease.

DEVOCHT, J. (1950). Overzichtelijke studie der huidige kennis van de Afrikaanse olifant. **[Notes on the African elephant and its diseases.]**—*Bull. agric. Congo belge.* **41**, 442-462. [French summary.] **1811**

A concise account of the African elephant, with details concerning its anatomy and physiology, its numerical population in different parts of Africa, and its diseases.—J. EDWARDS.

DE VRIES, L. P. (1951). **Cattle diseases control in the Netherlands.**—*Vet. Rec.* **63**, 766-771. **1812**

Farmers have been offered financial inducements to encourage them to eradicate TB. from their herds; there is a levy based on the volume of milk produced from herds which do not succeed in becoming TB.-free. This policy has been highly successful, and many areas of the country are now scheduled as free from the disease. In these areas, an attempt is now being made to eradicate brucellosis.

Streptococcal mastitis, warble flies, and liver flukes are also being attacked. F. & M. disease vaccine had proved to be very satisfactory.—G. B. S. HEATH.

ZHIKHAREV, A. A. (1949). **[Fowl diseases.]**—*Veterinariya, Moscow.* **26**, No. 12. pp. 25-29. **1813**

Discussion by ten named persons on the plate agglutination test for *S. pullorum* infection; pasteurella infection in fowls and ducks; fowl pox; vitamin A deficiency in ducks; poisoning of fowls by rape seed containing glycosides of the saponin group; TB., together with infestation with the mite, *Cytoleichus nudus,* of the abdominal and pectoral tissues; anthelmintic treatment of turkeys for *Prosthogonimus* infestation and of geese and ducks for *Hymenolepis* infestation.—F.A.A.

ANON. (1951). **Specimens for laboratory examination.** pp. 36. Wellington: Department of Agriculture. Wallaceville Animal Research Station. **1814**

The booklet is arranged alphabetically in order of the common diseases and lists the specimens that would commonly be required in order to facilitate laboratory diagnosis of a disease.

The conditions enumerated run to about 150, and in several instances special instructions are given in considerable detail. There are four Appendixes dealing with "Some important infectious diseases not present in New Zealand" (Appendix A); Maps of New Zealand showing respectively cobalt deficient and copper deficient areas and areas in which the cattle tick, the liver fluke and black disease are prevalent (Appendix B); "Important parasites of New Zealand" (Appendix C); and list of Department of Agriculture Bulletins (Appendix D).

This is a pamphlet that every practising

veterinary surgeon and field officer would appreciate.

A note on the methods of packing of specimens is given.—R. A. Huck.

Bennett, P. M. & King, A. S. (1948). **Studies on equine purpura haemorrhagica. II. Symptomatology.**—*Vet. J.* **104,** 414-420. [For part I, see *V.B.* **19,** 3010.] **1815**

Four cases were described in detail and observations were made on several other cases. Oedematous swellings occurred. Petechiae were not always seen, and the blood-clotting mechanism appeared to be normal in the cases studied. Fever was not present consistently and the pulse rate was raised relatively more than the temperature. One case had recurrent crises which were associated with temporary haemoconcentration. The intestinal tract appeared normal in the cases studied and the urine, though small in quantity, was normal.

—G. Fulton Roberts.

Hallenborg, T. (1951). Korsförlamningen hos häst. **[Myohaemoglobinaemia in horses.]**—*Nord. Vet.-Med.* **3,** 642-645. [English and German summaries.] **1816**

H. described the treatment of myohaemoglobinaemia in horses with 30 ml. 1% aneurin (vitamin B_1) solution intravenously and 20 ml. subcutaneously together with 10 ml. 10% vitamin C solution intravenously. Treatment must be given early.—H. Boyd.

Leuthold, A. (1949). Die eiterige Podotrochlitis des Pferdes. **[Purulent podotrochleitis in horses.]**—*Schweiz. Arch. Tierheilk.* **91,** 759-780. **1817**

An account of suppuration of the navicular bursa. The condition most commonly follows a nail injury. L. described the condition in some detail, dealing with diagnosis and with treatment, giving emphasis to surgical treatment, admitting, however, that the results were often disappointing. He gave some details of 34 cases so dealt with.—R. Hadek.

Kästli, P. (1951). Untersuchungen über den Euterkatarrh der Milchkühe. **[Udder catarrh.]**—*Schweiz. Arch. Tierheilk.* **93,** 364-372. [English, French and Italian summaries.] **1818**

The change from a symptomless latent infection to udder catarrh may be brought about by an accessory factor such as a mechanical trauma (e.g. incorrect milking). This assumption is supported by the existence of bacteriologically negative cases of udder catarrh, the frequent presence of staphylococci of low virulence and the persistence of milk changes despite the destruction of the organisms by penicillin.—W. Steck.

Hardy, W. T. & Price, D. A. (1952). **Sore-muzzle of sheep.**—*J. Amer. vet. med. Ass.* **120,** 23-25. **1819**

A disease which affects the nose, mouth and coronets of sheep appeared in Texas in 1948. The authors believe that this condition differs from contagious pustular dermatitis, but present no evidence in support of this contention.

—G. B. S. Heath.

Honeker. (1951). Euterkatarrh (Mastitis catarrhalis) bei der Ziege. **[Catarrhal mastitis in the goat.]**—*Berl. Münch. tierärztl. Wschr.* No. 12. pp. 231-232. **1820**

The characteristics of catarrhal mastitis in the goat were described, and one case of the chronic cystic type, associated with a haematoma, was illustrated.—G. P. Marshall.

Timoney, J. F. (1951). **Oedema disease of swine.**—*Irish vet. J.* **5,** 82-98 & 106-113. **1821**

A general account of the disease and of T.'s investigations. Much of this work has been reported in some detail elsewhere [*V.B.* **21,** 1463].—D. Luke.

Emsbo, P. (1951). **Terminal or regional ileitis in swine.**—*Nord. Vet.-Med.* **3,** 1-28. [In English. Danish and German summaries.] **1822**

Material from 58 cases of ileitis in swine was studied. The condition is found mainly in young pigs. The incidence is low: 23 cases being found in 1,410 pigs at abattoirs. The lesion is localized in the terminal part of the ileum and consists of hyperplasia of the muscular coat and of the mucous membrane. Details of the pathology and histology of the lesion are given.

The causal agent has not been identified and experimental transmission has not been achieved.

The condition is compared with human ileitis. In the pig a familial incidence is often seen which suggests that a congenital factor may be involved.—D. Luke.

Ceccarelli, A. (1947). Su di una affezione linfoadenitica trasmissibile dei suinetti a carattere aleucemico. Studio clinico-sperimentale e ricerche eziologiche preliminari. **[A transmissible lymphadenitis of piglets, non-leucaemic in character. Clinical experimental study and preliminary work on aetiology.]**—*G. Batt. Immun.* **37,** 305-334. [English and French summaries.] **1823**

After survey of the literature regarding

lymphadenitis in pigs, C. described an occurrence in which eight piglets in an 8-day-old litter of 12 were bitten at the root of the tail by water rats (*Mus decumanus*), two others were carried off by these rats, one died from unknown causes and one remained healthy. The scars on the bitten pigs healed normally, but 20 days later a large, hard, painless and cold swelling developed at the site where they had been bitten. The pigs remained normal in appetite and growth, but the subcutaneous lymph nodes were swollen and hard. No organism could be detected in the one piglet kept for examination, but filtered extract from a lymph node proved fatal to a g. pig in four days; it also had hard, swollen lymph nodes. From these preliminary findings C. suggested that the condition is due to a virus, spread by a rat bite, since the unbitten piglet was unaffected although in close contact with the others. The piglets were dosed with potassium iodide; they recovered.

—R. MACGREGOR.

GRACE, V. H., MORRILL, C. C., BUTZOW, R., HENDREN, P. & SAMPSON, J. (1951). **Studies on baby pig mortality. VI. Experimental uremia in young pigs.**—*Amer. J. vet. Res.* **12,** 206-214. [Authors' summary copied *verbatim.*] **1824**

In experimental anuria and uremia produced in 24 pigs by ligating both ureters, the blood concentrations of nonprotein nitrogen, urea nitrogen, uric acid, creatinine, and allantoin were greatly increased. The increase in uric acid was more pronounced in the younger pigs than in the older pigs, indicating that the former may not as yet have been physiologically adapted to convert uric acid to allantoin.

Obstruction of one ureter caused no marked changes in the nonprotein-nitrogen fractions of the blood and did not jeopardize the lives of the pigs even though the affected kidney was destroyed.

Complete obstruction of the flow of urine following bilateral ligation of the ureters was associated with severe anatomic and functional changes in both kidneys.

The chief symptoms associated with anuria and uremia in these pigs were apathy, drowsiness, weakness, and coma. Vomiting and convulsions were not observed.

I. BEVANS, M., DAVIDSON, J. D. & ABELL, L. L. (1951). **The early lesions of canine arteriosclerosis.**—*Arch. Path.* **51,** 278-287. **1825**

II. BEVANS, M., DAVIDSON, J. D. & KENDALL, F. E. (1951). **Regression of lesions in canine arteriosclerosis.**—*Ibid.* 288-292. [Authors' summaries slightly modified.] **1826**

I. A series of puppies four months of age were placed on a diet known to produce arteriosclerosis and were killed after intervals of 1–6 months from the start of the diet. The earliest gross lesions appeared after two months of sustained hypercholesteraemia and were similar to those observed in dogs which had been on experiment for 14 months. Histologically they differed in that intimal proliferation was rare until the sixth month, most of the elevation of the plaque being due to intramedial accumulation of lipoid. There was a rough correlation between the degree of the hypercholesteraemia, the length of time on experiment and the extent of the lesions produced.

II. Arteriosclerotic lesions produced in young dogs kept on a cholesterol-thiouracil diet for 4–6 months are capable of regression and probably ultimate disappearance when the dogs are taken off the diet and fed a stock diet for 2–4 months before being killed. Serum cholesterol levels fall to a normal value within one week. Regression of the plaques despite sustained hypercholesteraemia has also been observed, particularly in the thyroid arteries.

SPECTOR, W. G. (1951). **The nature of fowl nephritis.**—*Agric. Res. Coun.* Rep. Ser. No. 11. London: H.M. Stat. Off. pp. 16. 3s. 6d. **1827**

Histopathological details are given of a series of kidney lesions from domestic poultry. The lesion is a chronic inflammatory infiltration of the interstitial tissues, probably associated with stagnation of urinary salts. Secondary infection of the urinary tract is common. The condition is related to the low solubility of the urates and their excretion in large amounts.

—D. LUKE.

ANON. (1950). **Color atlas of pathology. Hematopoietic system, reticulo-endothelial system, respiratory tract, cardiovascular system, liver, alimentary tract, kidney and urinary tract, musculoskeletal system.** pp. xi + 546. Philadelphia, London & Montreal: J. B. Lippincott Co. $20.00 or £7. **1828**

This book was prepared under the auspices of the United States Naval Medical School, the pathological material on which it is based being available in the School's medical department, the Army Institute of Pathology, the Johns Hopkins Hospital, and Georgetown University Medical School. C. F. Geschickter was responsible for writing the text and for supervising the colour lithographic work. The book was planned in view of the need in the field of human pathology for "a comprehensive, con-

cise and realistic source of reference, with reproductions in full colour which would bring to the student, the clinician, [and] the laboratory diagnostician a readily utilizable and intelligible standard of comparison as a guide in the study and interpretation of both gross and microscopic findings''.

Apart from 23 excellent coloured drawings of blood or bone marrow films, mainly illustrating anaemia and leucaemia, something under one-third of the total number of figures in the book consist of colour photographs of patients or of macroscopic specimens, along with reproductions of radiographs, while the remainder are practically all colour photomicrographs. The arrangement in the case of each system (not all the body systems are dealt with) is to have first a ''descriptive survey'' of the diseases of the system, this being followed with a ''colour unit''. Here, there are on each page three colour pictures, which may show, for example, a macroscopic specimen (some magnificent pictures being included), and low and higher power views (sometimes in closely related magnifications, *e.g.* ×50 and ×100) of histological sections. Alongside the pictures is textual matter, with brief details of the case from which the material illustrated was derived, and descriptions of the pathological features, with comments.

It seems probable that the most useful application of colour reproduction to the preparation of an atlas of pathology would be found in illustrating the macroscopic pathological aspects of diseases, and, in future editions of this book, perhaps more room will be found for such macroscopic material. A certain restriction in the number of photomicrographs could be achieved without very great loss, for, as a general rule, coloured photomicrographs are perhaps not very much superior, and may in some cases even be inferior, to the conventional black and white reproductions in bringing out the salient features of a histopathological section. Of course, in the case of some special stains, the use of colour may be very rewarding. The book is very well produced, but the price is, although understandably, very high.

—E. Cotchin.

Weil, J.-T. (1951). La consolidation de fractures *in vitro* et l'influence de l'Ossopan. **[Healing of bone fractures and the influence of ossopan.]**—*Schweiz. Z. Path. Bakt.* **14,** 205-224. [In French. English, German and Italian summaries. Abst. from English summary.] **1829**

An account of the histological study of repair *in vitro* of long bones after experimental injury; and of the possible influence of a bone extract referred to as ''ossopan'' on regeneration. It is stated that the addition of this extract to the culture medium aided the healing process the first eight days after explantation.

Simmons, P. E. (1951). **Climate and facial eczema in New Zealand: II.**—*N.Z. J. Sci. Tech.* Ser. A. **33,** 53-57. **1830**

S. concluded that serious outbreaks of facial eczema are associated with high earth and air temperatures.—G. B. S. Heath.

Kroon, D. B. (1951). **Formation of intrafollicular follicles in the thyroid gland of the hamster as a result of administration of thiouracil derivatives.**—*Acta endocrinol.* **8,** 343-361. [In English, author's summary copied *verbatim.*] **1831**

Colloid-filled intra-follicular follicles developing in the thyroid of the hamster after administration of methyl- or propylthiouracil are described. These secondary follicles develop from cell proliferations in the wall of the primary follicles, the centres then undergoing holocrine disintegration. Tertiary follicles may form in the same way inside the secondary follicles.

The more fluid the holocrinely-produced colloid in the secondary follicle becomes, the flatter do the cells become, until finally the vesicle may burst. The presence of alkaline phosphatase in the walls of the secondary follicles suggests, however, that secretion into the primary follicle is already taking place before this time.

Hertz, R., Schricker, J. A. & Tullner, W. W. (1951). **Dietary and dosage factors affecting thyroxine inhibition of estrogen-induced lipemia in the chick.**—*Endocrinology.* **49,** 168-171. [Authors' summary copied *verbatim.*] **1832**

Administration of thyroxine will suppress the marked hyperlipemia induced in young chicks by treatment with estradiol benzoate and the degree of suppression is proportional to the dosage of thyroxine. This suppression of the lipemia is not accompanied by any interference with the oviduct-growth effect of the administered estrogen. Oral administration of an excess of B-complex factors does not reverse the thyroxine inhibition of the lipemia, suggesting that the effect is not due to a thyrotoxic depletion of any of these dietary factors. The estrogen-induced increment in plasma biotin and fat-soluble factor (i.e., F.S.F. of Trager) is also suppressed by thyroxine.

See also absts. **1728** (diseases of dogs); **1734** (virus diseases of dogs and foxes); **1890** (genital infections in mares).

ANON. (1951). **Investigations into etiology and control of enzootic (toxaemic) jaundice of sheep. Report of the Investigation Committee for the year 1950-51.**—*Aust. vet. J.* **27,** 203-206. **1833**

During the year some experimental evidence was obtained that sheep that have grazed on *Heliotropium europaeum* are more susceptible to chronic copper poisoning than if not so grazed. Work is continuing in an effort to elucidate the mode of action of molybdenum in preventing the accumulation of copper in the body.—D. C. BLOOD.

SCHULZE, W. (1947). Drei Todesfälle bei Hunden nach Anwendung von Antex-Läusemittel. **[Poisoning of dogs with "antex" insecticide.]**—*Berl. Münch. tierärztl. Wschr.* No. 11. pp. 135-136. **1834**

A note on the deaths of three out of 87 dogs with louse infestation, following skin treatment with "antex", a proprietary remedy stated to contain copper. The three dogs died from about an hour to a few hours after treatment.—E.G.

I. CARTA, A. (1949). Sulla patogenesi del mal della ferula. **[(*Ferula communis*) poisoning.]**—*Atti Soc. ital. Sci. vet.* **3,** 239-244. [English and French summaries.] **1835**

II. PANELLA, I. & COSTA, A. (1949). Il succo di radici di ferula contiene un principio ipoprotrombinemizzante. **[Increased prothrombin time in rabbits fed juice from ferula roots.]**—*Ibid.* 244-250. [English and French summaries.] **1836**

III. COSTA, A. & PANELLA, I. (1949). Raffronto fra intossicazione da dicumarolo ed intossicazione da succo di radici di ferula. **[Comparison between dicoumarol and ferula root juice poisoning.]**—*Ibid.* 251-255. **1837**

IV. PANELLA, I. & PERRINI, F. (1949). L'attivita' tromboplastinica del cervello e del polmone nei conigli intossicati con dicumarolo e nei conigli intossicati con succo di radici di ferula. **[Comparison of thromboplastin from brain and lungs of rabbits poisoned with dicoumarol and of rabbits poisoned with ferula root sap.]**—*Ibid.* 256-258. [English and French summaries.] **1838**

I. Poisoning by *F. communis* (Umbelliferae) may be acute or subacute. In the acute form the chief symptoms are anorexia, haemorrhagic enteritis, haematoma, pallor of the mucous membranes and a delay in the coagulation time of the blood. In the subacute form there is progressive anaemia with oedema of the dependent parts, hydraemia and death from cachexia. These symptoms resemble those seen in sweet clover disease.

II. Rabbits to which fresh *F. communis* root juice was given, had typical symptoms of poisoning with a delayed coagulation time caused by a reduction in the prothrombin level of the blood, the level returning to normal after witholding the juice for 2–3 days.

III. The administration of dicoumarol to rabbits produced effects essentially similar to those seen following *F. communis* root juice administration. Both produce a fall in the prothrombin level of the blood.

IV. Using Quick's method for determining prothrombin time, a comparison was made between brain and lung thromboplastin prepared from rabbits poisoned with dicoumarol and similar thromboplastin prepared from rabbits poisoned with the juice obtained from ferula root. In both cases the results were strikingly similar and it is concluded that a dicoumarol-like substance must be present in ferula root.

—J. A. NICHOLSON.

I. COSTA, A. (1951). Fibrinogeno e fattore V° nella diastesi emorragica da succo di radici di *Ferula communis*. **[Delay in coagulation of the blood in animals poisoned with *Ferula communis*.]**—*Arch. Vet. Ital.* **2,** 153-158. [English, French, German and Spanish summaries. Abst. from English summary.] **1839**

II. DEIANA, S. (1951). L'azione della nicotinamide nell-intossicazione da succo di radici di Ferula communis. **[Effect of nicotinic acid in poisoning by *Ferula communis*.]**—*Ibid.* 159-162. [English, French, German and Spanish summaries. Abst. from English summary.] **1840**

I. C. stated that in sheep and rabbits after oral administration of juice from *F. communis* roots, the delay in coagulation time of the blood is not caused by alteration of the fibrinogen, but by hypoprothrombinaemia.

II. In rabbits poisoned with the juice of *F. communis* roots, treatment with nicotin amide was not curative, but it had a limited protective action against hypoprothrombinaemia.

KHALIMBEKOV, M. M. (1950). **[Poisoning of horses with "smartweed"** (*Acroptilon picris*) (*Polygonum hydropiper*?)**]** — *Veterinariya, Moscow.* **27,** No. 5. pp. 31-33. **1841**

K. recorded the P.M. examination of 15 horses considered to have been poisoned by ingestion of "smartweed" or water pepper, *Poly-*

gonum hydropiper. He discussed the conditions under which this plant may have poisonous properties. No new material.—F.A.A.

WHITFIELD, A. G. W. & ARNOTT, W. M. (1951). **Transient disturbances of consciousness in hepatic cirrhosis.**—*Brit. med. J.* Nov. 3rd, 1054-1056. [Authors' summary copied *verbatim*.] **1842**

Transient attacks of unconsciousness are described in three cases of hepatic cirrhosis [in human beings]. Death in cholaemia followed within a period of months in two of the cases. The attacks were associated with fluid retention, but the precise mechanism of their causation is not understood. [Drowsiness is a feature of liver cirrhosis in horses caused by ragwort poisoning.]

See also absts. **1646** (mouldy hay); **1917** (report, Australia); **1918** (report, New Zealand).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under appropriate disease)

ANON. (1950). Beiträge zur Anwendung der Isotopentechnik in Biologie, Klinik und Therapie. **[Isotopes in biology, clinical pathology and therapy.]** pp. 213. Basle: Benno Schwabe & Co. Swiss Fr. 15. **1843**

This symposium contains contributions from eminent Swiss workers investigating the application of radio-active materials in biological fields. P. Scherrer and R. Steffan introduce basic facts concerning the nature of isotopes and Karl Bernard presents results of recent research into intermediate metabolism using labelled compounds. G. Joyet discusses technical problems encountered in biological investigations with radio-active material. Apparatus and methods are described for improving the accuracy of measurements. Bernard surveys work on intermediate metabolism using deuterium as a tracer element. Various aspects of iron metabolism, with particular reference to haematology, are dealt with by Vannotti, Closuit and Jaccottet. A further article by Vannotti describes the use of radio-active phosphorus and iodine in the treatment of diseases of the lymphatic system and thyroid gland respectively. Müller reviews practical procedures suitable for use in medical dosimetry and for localization of activity. Vannotti elaborates the protective measures essential for the safe handling of these dangerous materials.

There is a catalogue of radio-active isotopes and their various properties.

The symposium forms a very useful contribution to this rapidly expanding science.

—E. F. LEWIS.

WEIDMANN, H. (1948). Beiträge zur physikalischen Chemie und Pharmakologie emulgierter Teerderivate mit besonderer Berücksichtigung des oberflächenaktivierten Encarbol. **[The physical chemistry and pharmacology of emulsified tar derivatives with special reference to surface-activated "encarbol".]**—*Schweiz. Arch. Tierheilk.* **90**, 152-156 & 198-202. **1844**

The action of emulsified tar products is influenced by the addition of substances lowering surface tension; the tar derivatives become less irritant. It seems likely that creolins owe their astringent action on the bowel to a depressing influence on intestinal tonus.—W. STECK.

See also absts. **1572** (bromine in staphylococcal infections); **1576-1577** and **1761** (cortisone); **1578** (swine dysentery); **1596** (sphingosine); **1599** (murine leprosy); **1654-1655** and **1661** (antrycide); **1666** (trichomoniasis); **1668** (trichocidin); **1671** (coccidiosis); **1774** ("SK-9" parasiticide); **1777** (antimonial compounds against liver fluke *in vitro*); **1783-1784** (phenothiazine); **1793** (flavonoids); **1829** (ossopan for bone fractures); **1831** (thiouracil); **1834** ("antex" insecticide); **1865** (antibiotics and fertility of bull semen); **1902** (hormones).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ALEXANDER, P. (1951). **A resistant membrane in wool.** [Correspondence.]—*Nature, Lond.* **168**, 1081-1082. **1845**

In wool fibres, a fraction constituting about 10% of the total weight resists dissolution after breakdown of the disulphide bonds, even in powerful protein solvents. A. considered that this material is a separate component of the wool fibre.—G. B. S. HEATH.

BAUMANN, C. & GAILLARD, B. D. E. (1948). De practische betekenis van de functiebepaling der bloed-liquorbarrière bij neurologische patiënten in de tropen. **[Estimation of plasma permeability of the choroidal barrier in tropical neurology.]**—*Ned. Tijdschr. Geneesk.* **92**, 686-698. **1846**

Using the Walter bromide test, of which details are given, the authors investigated the permeability of the choroidal barrier in human beings, all of whom had suffered from some form of illness after a short residence in the tropics. There was increased function of the

choroidal vascular plexus, resulting from increased permeability of the capillaries, and a consequent change in the composition of the cerebrospinal fluid with increased tension. Tables are given showing details.

—P. L. LE ROUX.

WHITTLESTON, W. G. (1948). **Some observations on the nature of the milk let-down mechanism in the cow.**—*Proc. 8th Ann. Conf. N.Z. Soc. Anim. Prod.* pp. 109-110. **1847**

W. produced evidence that there is in some machine-milked cows a second let-down process resulting in the accumulation of "strippings". It is suggested that with vigorous machine milking or with some hand milking there may be an inadequate initial stimulus resulting in an inadequate initial let-down process. Alternatively, the "let-down" reflex may be inhibited by some unpleasant stimulus during milking.

Peterson (1944) suggested that strippings may result from "crawling" of the teat cups and the closure of the annular fold. This does not, however, account for the production of strippings in all cows.

In a test on two cows it was found that when two quarters were milked at a time at an interval of 12–18 min. the yield declined unless their udders were stimulated prior to the milking of the second two quarters. Further, using electric shocks administered to cows trained to double-milking procedures and milked four quarters at a time with an interval of 12–18 min. between milkings, there was decline in the milk ejection curves for the first milking and in the rate of milking, with increasing electric shock after the commencement of the first milking, the opposite trend being shown, however, in the second milking curve.

It was concluded that re-stimulation results in a second outflow of the milk let-down hormone from the posterior pituitary, and that the amount of milk drawn at a second milking is an inverse function of the efficiency of the let-down reflex prior to the first milking.

—J. B. SWAN.

STRÖHLE, O. (1950). Die Blutkörperchensenkungsreaktion beim Rind und ihre klinische Verwertbarkeit. **[The value of the erythrocyte sedimentation reaction in cattle.]**—*Inaug. Diss., Munich.* pp. 42. **1848**

A study of the sedimentation rate of blood from healthy and diseased cattle was carried out and a comparison made between the results obtained by several methods. The sedimentation rate was found to be so variable that a normal value for cattle cannot be given. Disease processes such as TB., fascioliasis, chronic inflammations etc. did not appear to influence the sedimentation rate.

—J. A. NICHOLSON.

LAMBIN, S., BAZIN, S. & SALAS, A. (1951). Action des sels de cuivre sur les érythrocytes. **[Action of copper salts on erythrocytes.]**—*Ann. Inst. Pasteur.* **81,** 572-580. **1849**

A study of the action of copper salts on haemolysis phenomena, hypotonic resistance and erythrocyte volume is described.

—G. DAVIES.

BIERMAN, H. R., KELLY, K. H., KING, F. W. & PETRAKIS, N. L. (1951). **The pulmonary circulation as a source of leucocytes and platelets in man.**—*Science.* **114,** 276-277. **1850**

The leucocytosis and thrombocytosis which follow intravenous epinephrine administration also occur in splenectomized patients. Catheterization of the right ventricle and an appropriate large artery provided frequent samples for cell counts after epinephrine administration. The authors observed that the increase in the number of leucocytes and platelets in the arterial sample preceded and exceeded that found in the venous blood by at least one to two circulation times. The arterial-venous platelet difference was more marked and sustained than the leucocyte discrepancy.

The authors deduce that the pulmonary circulation may act as an available source of leucocytes and platelets. This does not imply production of those cells in the lung, but merely their delivery by the lung into the general circulation in response to a specific stimulus.

—L. M. MARKSON.

MORPURGO, E. (1949). Ricerche sulla presenza e sul decorso delle fibre nervose nell'omaso dei ruminanti domestici. **[The nerve supply of the omasum of domestic ruminants.]**—*Nuova Vet.* **25,** 437-443. **1851**

The course of the nerve fibres in the omasum of domestic ruminants was described. M. observed a nerve ganglion in the greater curvature of the omasum of an eight inch bovine foetus and discussed its function.—B. BALDELLI.

VON EULER, U. S. (1951). **The nature of adrenergic nerve mediators.**—*Pharmacol. Rev.* **3,** 247-277. [Author's summary copied *verbatim.*] **1852**

The chief points in the present concept of the adrenergic nerve mediators may be briefly summarized as follows:

Convincing evidence has been produced to show the *l*-noradrenaline is the chief adrenergic nerve mediator in mammals. In addition *l*-adrenaline occurs admixed in various small

amounts with the noradrenaline. The hypothesis of purely excitatory or purely inhibitory sympathins is no longer tenable. The liberation of other related substances such as hydroxytyramine, tyramine and oxidation products of dihydroxyphenyl derivatives in adrenergic nerve activity has not been proven in mammals.

The adrenergic nerve mediators *l*-noradrenaline and *l*-adrenaline can account for most actions observed on stimulation of adrenergic nerves.

Noradrenaline and adrenaline are formed in the adrenergic neurons and appear in small quantities in the nerve trunks and in larger amounts in the innervated organs, presumably occurring in the terminal nerve structures.

The adrenergic nerve mediators disappear from an organ after degeneration of the nerves but reappear on nerve regeneration.

There is some evidence in favour of the formation of noradrenaline by decarboxylation of dihydroxyphenylalamine and subseqent introduction of a hydroxyl group in the side chain of the hydroxytyramine so formed.

The adrenergic nerve mediators are rapidly inactivated in the tissues by enzymes (amine oxydase and catechol oxidase). A smaller part is excreted in free or conjugated form in the urine.

The physiological actions of noradrenaline and adrenaline differ in many important respects. The main function of noradrenaline seems to be the normal control of the circulation, while adrenaline produces various effects in conditions of stress and emergency.

EMANUELSSON, H. (1951). **Proteolytic activity in hen's egg prior to incubation.** [Correspondence.] — *Nature, Lond.* **168,** 958-959. **1853**

The presence of free amino acids in the yolk but not the white of fertile hens' eggs suggested that proteolytic enzymes were present. Using haemoglobin as substrate, the presence of three separate proteinases, each active at a different pH, was indicated.—R. MARSHALL.

See also absts. **1757-1760** (colostrum); **1802** (temperature and riboflavin requirement of pigs); **1870** (innervation of the seminal vesicles); **1896-1898** (environmental physiology); **1902** (use of hormones in animal production); **1937** (book, enzymes).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

BARBER, G. O. (1951). **The place of the general practitioner in the tuberculosis service.**—*Brit. J. Tuberc.* **46,** 19-23. **1854**

B. stated that a few months after children were evacuated during the second world war [does not state where the observations were made or the town from which evacuated—author presumably referring to his own observations in Essex on children evacuated from London.] "tuberculous glands developed in an alarming way" and that cases of tuberculous meningitis also occurred. He suggested that, as the children had probably previously had only pasteurized milk they lacked immunity to TB. that would have developed as a result of using infected milk, such as would have been obtained in a country district.

He spoke of the need for the local Medical Officer to know the conditions in which milk is produced in his locality. He discussed what policy the Medical Officer should advise parents to follow with regard to TB. infected milk.

KARČEVSKAJA, M. D. (1949). Die Lebensfähigkeit der Bakterien der Darm-Typhusgruppen in der Milch. **[Viability of salmonella bacteria in milk.]**—*Hyg. sanitätsw.* No. 1. pp. 37-39. [Abst. from abst. in *Zbl. Bakt. I. (Ref.)* **148,** 107. (1950).] **1855**

Survival times in raw milk at room temperature and in the incubator respectively were: *S. paratyphi B,* five days and three days; *S. enteritidis,* four days and two days; *S. typhi,* three days and two days. *Bact. flexneri* survived only 15 min. at room temperature.

—ROY MACK.

MELLANBY, E. (1951). **The chemical manipulation of food.**—*Brit. med. J.* Oct. 13th, 863-869. **1856**

Of sweetening agents, dulcin [*p*-phenetolurea] and P 4,000 [2-amino-4-nitrophenylpropyl ether] were toxic to animals; azo dyes are sometimes carcinogenic; agenized flour causes nervous disorders in animals; some impure emulsifiers may liberate toxic ethylene glycol; mineral oils may cause non-absorption of vitamins; toxic insecticides may remain as residues on food plants or pass into milk.

—R. MARSHALL.

SEGALOVE, M. & DACK, G. M. (1951). **Growth of bacteria associated with food poisoning experimentally inoculated into dehydrated meat.** —*Food Res.* **16,** 118-125. **1857**

In tests to determine the moisture content and length of incubation necessary for *Clostridium botulinum,* Type A, and for food poisoning strains of staphylococci, streptococci and salmonella to grow, the authors found that *Cl. botulinum* will produce its toxin in 48 hours, but not in 24, in meat samples containing 60%

moisture; in seven days in samples containing 40%, but not after nine months in samples containing 30% or less, all samples being incubated at 37°C.

Strains of staphylococci or streptococci isolated from food poisoning outbreaks did not grow in samples of meat containing 20% moisture or less; in samples containing 30% growth was dependent on the salt content. High salt content inhibited growth. The staphylococcus strain used grew in all meat samples containing 40% or more moisture regardless of salt up to a concentration of 4·17%. The streptococci grew feebly only in a beef sample with the lowest salt content and 40% moisture and in three similarly conditioned pork samples. At 50% and 60% moisture growth occurred in all beef and pork samples.

In meat samples containing 50% moisture, salmonella grew in only one pork sample with a low salt concentration, but in meat containing 60% moisture salmonella grew in all samples except three of high salt content.—E.M.J.

THORNTON, H. (1951). **The aetiology of bone taint.**—*Brit. vet. J.* 107, 371-376. **1858**

A general discussion on the subject. Fatigue, trauma of the soft tissues round the head of the femur and subsequent close packing of carcasses are described as the chief predisposing factors to bone taint.—G. V. LAUGIER.

KEEN, B. A. (Undated). **The East African Agriculture and Forestry Research Organisation. Its origin and objects.** pp. 12. Nairobi: East African Standard Ltd. **1859**

The history of the inauguration of the East African Agricultural and Forestry Research Organisation (E.A.A.F.R.O.) and of its relationship to its sister organisation the East African Veterinary Research Organisation (E.A.V.R.O.) is described.

The capital grant of £296,000 for provision of headquarters was utilized on facilities for both organisations at Muguga near Nairobi. The administrative offices of both are in the same building and they share a common library and librarian and certain other services such as general analysis and statistical research. Research in Animal Husbandry is to be a joint concern of both.

The laboratories consist of single-storey blocks, each of six laboratories and six ancillary laboratories. The library is to accommodate the existing Amani library and that of E.A.V.R.O.

The office block includes accommodation for a Bureau of Epizootic Diseases and for the head of the Joint Animal Husbandry Division.

Half the maintenance charges are to be borne by the British Government, the remaining half by the Governments of the various East African colonies.

The objects are to conduct basic and technological researches in branches of science bearing on agriculture and forestry and to test new knowledge in the environmental conditions in East Africa. Practical investigations will be made by the departmental services of the various East African Governments.

The joint animal husbandry programme with E.A.V.R.O. will study the growth and nutrition of animals in relation to their environment.

Specialist committees will co-ordinate the work of E.A.A.F.R.O. with that of the territorial departments.—M.C.

ANON. (1950). **[Twenty-five years' work at the Vitebsk Veterinary Institute.]**—*Veterinariya, Moscow.* 27, No. 1. pp. 61-63. **1860**

Founded in 1924, the Institute has a staff of 62 with 600 students and has turned out 1,700 veterinarians and 284 "feldshers". There are a pathological department, an X-ray department, 15 physiotherapeutic installations where 120,000 animals have been treated, and a museum. Theses presented number 198 and 500 articles have been published. The library contains over 60,000 volumes. Outside lectures and talks to farming communities are given over an area of 10,000 sq. km. Since 1949 three-monthly refresher courses have been held for all grades of veterinary workers.—F.A.A.

GRITSENYUK, N. A. & DOROSHAEV, N. N. (1950). **[Twenty-five years of Mongolian veterinary services.]**—*Veterinariya, Moscow.* 27, No. 2. pp. 4-7. **1861**

Animal husbandry is the main industry of the Mongolian Republic. A quarter of a century ago, under nomadic and feudal conditions, there were no veterinary services and infectious diseases were rife. In the interval 513 clinics and four schools for veterinary "feldschers" have been established and 5,000 "feldshers" placed in service. In 1942 a veterinary faculty was established at the Mongolian State University, 100 veterinarians having graduated to date, in addition to research workers. Rinderpest, which caused 120,000 deaths annually, has been eliminated and other diseases greatly reduced. In 1948, 6,403,000 animals were examined, vaccinated or treated for various diseases. Control of glanders commenced in 1948.

Mongolia is to become the principal area for vaccine production in the U.S.S.R. The number of veterinary establishments is to be still further increased and the number of cattle raised to 31 million with a concurrent improvement in quality.—F.A.A.

See also absts. **1642** (botulism in man from ingestion of fish); **1643** (public health aspect of veterinary mycology); **1753** (Q fever in abattoir personnel); **1862** (water supply).

LIVESTOCK HYGIENE

VEAL, T. H. P. (1950). **The supply of water.** pp. xi + 276. London: Chapman & Hall Ltd. 2nd Edit. Revised. 25s. **1862**

This book comprising 15 chapters is written mainly for students or young engineers. Information is presented concerning subjects which are dealt with very briefly in ordinary text books on hydraulics; they include hydrology, the design and construction of reservoirs, layout of distributing systems and the purification of water, all being of great importance to the Waterworks Engineer. In this second edition, additions were made in sections dealing with flood flow and water purification. Problems connected with the supply of water to rural areas are discussed in a separate chapter, recent legislation in Great Britain having done much to encourage the extension of piped supplies to thinly populated districts. The author does not deal with the subject of transmission of diseases to animals by water contaminated for example, with sewage or other agents. Most of the chapters have a bibliography at the end: the text is illustrated by some 19 tables, 118 diagrammatic and other drawings and there is an index. The book is strongly bound in a serviceable cover; printing and paper are excellent and the subject matter is very clearly set out.—E.M.J.

KRÖGER, E. & TRETTIN, G. (1951). Abwasseruntersuchung auf Tuberkelbakterien. **[The examination of hospital effluents for the presence of tubercle bacilli.]**—*Zbl. Bakt. I. (Orig.)* **157,** 206-226. [English, French and Russian summaries. Abst. from English and French summaries.] **1863**

The authors discussed the presence of tubercle bacilli in effluent from hospitals. The importance of differential diagnosis between tubercle bacilli and the acid-fast saprophytes regularly found in such effluents was emphasized. Tubercle bacilli suspended in collodion bags in the drain channel of a sanatorium were alive after 36 days.

REPRODUCTION AND REPRODUCTIVE DISORDERS

VAN DRIMMELEN, G. C. (1951). **Artificial insemination of birds by the intraperitoneal route. A study in sex physiology of pigeons and fowls with reports upon a modified technique of semen collection, and a new technique of insemination, and observations on the spermatozoa in the genital organs of the fowl hen.**—*Onderstepoort J. vet. Res.* Suppl. No. 1, pp. 1-212. **1864**

This is a detailed description of artificial insemination of birds by the intraperitoneal route. A literature review of artificial insemination of birds, an evalution of the intraperitoneal method and a method of storage of spermatozoa are included. Data were collected on 62 intraperitoneal inseminations with 21 control matings of pigeons and on 117 intraperitoneal inseminations with 33 control matings of fowls. The operation proved to have no serious effects on egg production, on the health of the females or on the onset of fertility. A higher percentage of fertility was found in the intraperitoneal insemination than *per vaginam*. Observations were made on 1,163 collections of pigeon semen and its fertilizing qualities were tested in 220 intraperitoneal inseminations and 71 control matings. The fertilizing quality of the semen proved to be of greater importance than the route of introduction. Further details of control inseminations and matings and of the samples of fowl semen used are given in an appendix.

—C. BOULTER.

OLDS, D., OLIVER, L. & SEATH, D. M. (1951). **The effect of antibiotics on the fertility of bull semen and their relationship to the estrous cycle length of dairy cattle following artificial insemination.**—*J. Dairy Sci.* **34,** 966-970. [Authors' summary modified.] **1865**

Fertility data were obtained for 184 semen samples collected from 25 bulls. Each sample was divided into two equal portions, one being used as a control and the other treated with 1,000 units each of penicillin and streptomycin per ml. Of 5,241 cows bred with control semen, 68·4% did not return for second service within 120 days to 150 days, while of the 5,299 cows bred with treated semen, 68·1% apparently conceived. The fertility of the bulls ranged from 48·8 to 83·3% which was not significantly

affected by the addition of penicillin and streptomycin to the semen, although the trend was to improve that of low and lower that of high fertility.

Most of the semen was 24 to 36 hours old during its first day of use. There was a percentage decrease of 5·4 between the first and second day of use for the control semen and of 5·0 for the treated semen. The antibiotics did not reduce this decline to a significant degree.

Among 3,321 cows which returned for second service, the mean interval between first and second service was 34·7 days. However the modal interval was 21 days. There were significant differences between the distribution of returns for cows bred with control semen and for cows bred with treated semen. Among the latter there was a larger percentage at intervals approximating the expected three- and six-week intervals, whereas among the controls there was a larger percentage in the 25- to 35-day and 49- day or over groups.

VAN DRIMMELEN, G. C. & OETTLÉ, A. G. (1949). **Changes in sperm quality.**—*Proc. Soc. Study Fertility. Edinburgh Conf.* No. 1. pp. 5-10. **1866**

The greater part of this paper constitutes a competent synthesis, from the experimental work of others on isolated aspects of the question. A graphical presentation is suggested, as of great practical use, to represent how different factors influence the maturation and senescence of spermatozoa.

In the fowl, very few spermatozoa from the testis are capable of fertilizing eggs; from the epididymis rather a larger proportion, and in the vas the cells have reached their maximum fertilizing power. "Fecundity" denotes the ability to produce viable young, "fertility" that to initiate development of the ovum.

The position in the mammal is much less clear. There is no evidence that fecundity and fertility are attained separately, though some g. pig results indicate that the former is sometimes lost before the latter. Testicular hormones appear necessary for optimal epididymal survival. In ram spermatozoa motility long outlasts fertility. The shape of the curve is influenced by the conditions of storage, *e.g.* presence or absence of oxygen, accessory secretions, etc.; also sometimes by route of insemination (the intraperitoneal route being more efficient in fowls) and by frequency of ejaculation. Cytogenetic abnormalities will also affect the curve, as when hybrid lethality prevents all embryonic development beyond a certain early stage.

—F. L. M. DAWSON.

THORAUSCH, K. (1951). Untersuchungen über ein Messinstrument zur Feststellung der Spermadichte für Bullensperma. **[An apparatus for measuring the density of bull semen.]**—*Tierärztl. Umsch.* **6,** 136-137. **1867**

The first application to this purpose in Western Germany of the photo-electric cell colorimeter. The instrument is described in some detail. Dilution with citrate but not yolk is carried out before estimation. The method was checked against the "blood count" technique, and found accurate to within about 10%, but in calibrating the scale of the instrument it was found that sperm density was not strictly or directly proportional to the scale reading.

—F. L. M. DAWSON.

BROCHART, M. (1951). Augmentation de la durée de conservation du sperme de taureau par dilution progressive en milieu hypotonique. **[Prolongation of viability of spermatozoa by progressive dilution of the semen.]**—*Rec. Méd. vét.* **127,** 153-160. **1868**

A comparing chamber as described by Blom was adapted to produce a triple anaerobic incubating chamber in which the same three samples could be watched for hours while remaining in very fair condition. This apparatus is kept in the incubator and examined in a thermostatic box at the same temperature; distilled water at pH 7 was added progressively in 0·05 ml. quantities to tubes each containing 1 ml. semen, one min. intervening between additions. Motility was then checked every half hour as described, and the survival time—to the disappearance of all movement—was recorded. Survival time increased considerably up to a doubled longevity, as the percentage of added water rose to 60. It was found that the use of hypotonic egg yolk citrate diluent half the stength of the isotonic doubled longevity *in vitro*. The experimental results do not conform to the view that death of spermatozoa is due solely to exhaustion of sugar reserves and the accumulation of lactic acid etc. It is suggested that the accumulation of metabolic poducts of low molecular weight may raise the osmotic pressure within the spermatozoa and this may be prevented by suspension in a hypotonic medium. [Presumably it is important to dilute progressively and by easy stages to avoid shock. Failure to do this may account for others' lack of success in observing prolonged viability in hypotonic diluents.]

—F. L. M. DAWSON.

WEISS, W. (1950). Der Einfluss verschiedener Glassorten auf die Lebensfähigkeit von Rindersperma. **[The influence of various**

kinds of glass on the viability of bull semen.] —*Inaug. Diss., Hanover.* pp. 28. 1869

To determine the effect of glassware on spermatozoa, splinters of different types of glass were added to tubes containing bull semen and the behaviour of the spermatozoa was examined after 12 hours at 4°C. All glass appeared to be detrimental, the main factor involved being the alkali content of the glass. It follows that glassware with the least alkali content should always be chosen for work with semen.

—J. A. NICHOLSON.

PANSINI, A. (1950). Nuove ricerche sull'innervazione vegetativa delle vescichette seminali di cavallo. [**Innervation of the seminal vesicles in the horse.**]—*Boll. Soc. ital. Biol. sper.* **26**, 552-554. 1870

An account is given of the morphology of the vegetative ganglia present in the connective tissue surrounding the seminal vesicles of the horse. The ganglia occur particularly at the crossing points of the nerve trunks or isolated along their paths or in the accompanying reticular meshwork. They are composed of a mass of cells, each with a single nucleus.

—J. A. NICHOLSON.

NOLL, D. O. (1949). **Studies on longevity of the sperm of the boar.**—*Philipp. J. anim. Indust.* **10**, 247-259. 1871

Only the vaginal overflow collection technique was employed. Samples of 30–50 ml. were immediately paraffin-sealed, stored for an hour at 15°C. before dilution, then filtered to remove gelatinous lumps. Egg yolk citrate with or without added sulphanilamide did not appreciably affect sperm survival. With egg yolk alone survival time was, roughly, quadrupled, the majority of spermatozoa surviving four days at 15°C. and some to nine days. The addition of 300 mg. sulphanilamide per 50 ml. yolk produced a further slight improvement. Stored at 5°C. most spermatozoa were still living after nine days. Sulphate and tartrate diluents were not found to promote survival, but these diluents had been mixed for three weeks before being used. Lengthened survival is attributed to mechanical inhibition of the activity of the spermatozoa by the yolk globules, also to Lasley's "cold resistance factor". The number of boars used is not stated, but at least four different breeds were involved.

—F. L. M. DAWSON.

CHANG, M. C. (1951). **Fertilizing capacity of spermatozoa deposited into the fallopian tubes.** [Correspondence.]—*Nature, Lond.* **168**, 697-698. 1872

Tubal insemination of rabbits at varying intervals before and after ovulation revealed that the spermatozoa required a stay of several hours in the female reproductive tract before they were capable of fertilization. It is suggested that this may explain the failure to fertilize mammalian ova *in vitro,* and also that sterility may be due to an incompatability between the environment of the female tract and the spermatozoa.

—J. A. NICHOLSON.

QUINLAN, J., VAN RENSBURG, S. W. J. & STEYN, H. P. (1951). **The oestrous cycle of the mare when maintained under stabled conditions with restricted exercise at Onderstepoort.**—*Onderstepoort J. vet. Sci.* **25**, 105-119. 1873

The experiment ran for 2½ years, during which the 30 mares were stabled at night and occupied a small bare paddock by day. They received liberal concentrate feeding, hay *ad libitum* and cut green lucerne in the summer months. Daily testing was carried out with a teaser stallion and any animals standing were served by one of two fertile sires. Results showed that a majority of the mares available in *any* given month came into season, though the percentage was lower in the winter and the mean duration of heat then longer, nine days from July to September as against four in January. This result confirms Crowhurst and Caslick's view that oestrus is longer early in the breeding season. The autumn-winter oestrous cycles averaged 36 days in length, as against 24 for the spring–summer ones. 65 cycles happened to be observed in each seasonal period. The shorter, summer, cycles tended to run a more rhythmic and smoother course. From April to July inclusive no mare conceived, though several were served. The authors postulate a "pituitary lull".

The best month for fertility was November, when 55% of services resulted in conception. This low figure is ascribed to under-exercise, and lack of nutritional supplements. A mare conceived that was served only once, on the 19th day of a 23-day oestrous period. Another was successfully served on the 10th day of a 26-day period.—F. L. M. DAWSON.

HERRICK, J. B. (1951). **The cytological changes in the cervical mucosa of the cow** (*Bos taurus*) **throughout the estrous cycle.**—*Amer. J. vet. Res.* **12**, 276-281. 1874

Daily biopsy specimens of cervical mucosa were taken from three cows throughout the oestrous cycle. Sections from the mucosa of all three cows presented a similar picture, the principal change being a build up of mucus in the columnar cells during proestrus, a release

at oestrus and a destruction of the damaged cells during metoestrus.—E. J. H. Ford.

Paredis, F. (1950). Experimentele bijdrage over de hypophyse in verband met de eierstokfuncties bij runderen. **[An experimental study of the bovine pituitary gland in relation with the ovarian cycle.]**—*Vlaam. Acad. Geneesk. België.* **12,** 296-335. [Abst. from English summary.] 1875

No correlation was observed between the cytological picture of the anterior pituitary and the phase of the oestrus cycle in heifers. There appeared to be a decrease in the number of small basophiles in the pituitaries of cows with cystic ovaries. The gonadotrophin content of the anterior lobe of the pituitary of heifers during oestrus was about one third that found during the luteal phase. The gonadotrophic potency of the pituitary during pregnancy was similar to that during the luteal phase.—A. T. Cowie.

Drieux, H. & Thiéry, G. (1951). La placentation chez les mammifères domestiques. III. Placenta des bovidés. **[Placentation of domestic animals. Placenta of the cow.]** —*Rec. Méd. vét.* **127,** 5-25. [For previous parts, see *V.B.* **21,** 3048 and **22,** 1515.] 1876

A chronological account is presented of the nidation of fertilized ova and the development of the placenta in the Bovidae. The macroscopic and microscopic structure of the cotyledon and the paraplacenta is described and compared with that found in the Equidae and the Suidae.
—Anita M. Mandl.

Hafez, E. S. E. (1951). **Inhibitory action of artificial light on the sexual season of the ewe.** [Correspondence.] — *Nature, Lond.* **168,** 336. 1877

The period elapsing from the start of treatment with artificial light to the date of the last oestrus exhibited thereafter was measured. H. considers that this may be affected by previous light environment and by breed.
—G. B. S. Heath.

Ferrara, B. (1951). La reazione di De Nito applicata alla diagnosi precoce di gravidanza nella cavalla e nell'asina. **[Early diagnosis of pregnancy in horses and donkeys using the De Nito test.]**—*Riv. Med. Vet. Zootec.* **3,** 20-32. [English and French summaries.] 1878

The De Nito test for pregnancy was non-specific and inaccurate when applied to the mare and donkey.—A. T. Cowie.

Gavrilyak, G. T. (1950). **[A skin pregnacy test for cows.]**—*Veterinariya, Moscow.* **27,** No. 1. pp. 34-38. 1879

The fingers are lightly slid down each side of the backbone and when the 9–13th vertebra is reached a slight pressure is exerted. The spinal nerves at the level of these vertebrae being connected with the horns of the uterus and the ovaries, a non-pregnant cow usually hollows its back; pregnant cows from about the 25th day of gestation onwards do not. Tests by different methods were made on over 600 cows. Results, proved to be correct later were:— by this skin method 94·1%, by the allergic [colostrum?] test 93%, by rectal examination 84·6%, by a hormonal method [details not given] 90% for pregnant cows; and for non-pregnant 96·9%, 95% and 92·2% respectively by the first three methods. Tests should be done before feeding in the morning under quiet conditions and by persons familiar to the cow.—F.A.A.

Dantchakoff, V. (1949). Le sexe; rôle de l'hérédité et des hormones dans sa réalisation. **[The influence of heredity and hormones on sex.]** pp. vii+210. Paris: Presses Universitaires de France. Fr. 480. 1880

The author considers at some length the various types of vertebrates used in investigations on sex determination and development; chromosomal mechanism of sex determination and the cytoplasmic factors which are of importance in the development of sex; the problem of the continuity of the germ plasm and its implications; the abnormalities which may occur in sexual histogenesis; the chemical nature of the hereditary factors, and the role of hormones in sexual histogenesis. There is a general summing up of the findings in this field to date and a bibliography of some 220 references. This book will be of interest mainly to embryologists and endocrinologists.—A. T. Cowie.

Le Magnen, J. (1950). L'odeur des hormones sexuelles. **[The smell of sex hormones.]**—*C.R. Acad. Sci., Paris.* **230,** 1367-1369. 1881

In tests on 20 human beings, the average sensitivity to the smell of sex hormones was 3½ times more acute in females than in males.
—W. R. Bett.

Robinson, T. J. (1951). **The control of fertility in sheep. II. The augmentation of fertility by gonadotrophin treatment of the ewe in the normal breeding season.**—*J. agric. Sci.* **41,** 6-63. 1882

Injection of 500 to 2,000 I.U. pregnant mare's serum on the 12th day of the oestrous cycle will regularly induce multiple ovulation at the following heat. The resulting ova are highly fertilizable and, with the lower doses, no damage to the ovary appears to be caused; 2,000 I.U. causes lutein cysts and ovulation may be inhibited.

This is a comprehensive article and will repay study by those who are interested in sheep breeding problems.—G. B. S. HEATH.

MEITES, J., WEBSTER, H. D., YOUNG, F. W. THORP, F., JR. & HATCH, R. N. (1951). **Effects of corpora lutea removal and replacement with progesterone on pregnancy in goats.** —*J. Anim. Sci.* **10,** 411-416. **1883**

At the 100th or 125th day of pregnancy all or some of the corpora lutea were removed from 21 goats. Thirteen of the goats were then injected daily with 10, 15, or 25 mg. progesterone. When all the corpora lutea were removed (or in one case both ovaries) abortion occurred within two days. Pregnancy was maintained, however, in 11 of 13 goats when progesterone was administered. It is concluded that the progesterone requirements of goats during the last third of pregnancy are of the order of 10 mg. per day.—ALFRED T. COWIE.

HIGNETT, S. L., DEAS, D. W., SMITH, J. & STEELE-BODGER, H. W. (1950). **Factors influencing herd fertility in cattle.**—*Vet. Rec.* **62,** 652-669. Discussion pp. 669-674. **1884**

H. pointed out that bovine infertility is a problem of the herd rather than of the individual animal. Infective organisms are often responsible, but can now be largely controlled. Hignett believes, however, that much infertility is caused by hereditary or nutritional factors, acting independently or together, which affect the proper functioning of the anterior pituitary gland. There is little good evidence of the part played by the hereditary factor alone in Britain. Good general nutrition is a prerequisite for high fertility, and adequate quantities of vitamins A and E and various trace elements, especially iodine and copper, may be important. However, Hignett believes that "faulty nutrition associated with calcium—phosphorus imbalance is the cause of at least one type of impaired herd-breeding efficiency". In support, he quoted reports in the literature which suggest that low fertility is associated with deficiency of phosphorus, or a wide $CaO:P_2O_5$ ratio, and also referred to the results of two herd surveys conducted by himself. The practice of increased liming and better grassland management have tended to produce pastures with a higher Ca content, while at the same time the lessened use of concentrates as feeding-stuffs for dairy cattle has meant a smaller intake of phosphorus. Another survey indicated that herd infertility was most prevalent on farms with heavily limed pastures. Two small-scale experiments, on g. pigs and cattle, tended to confirm his views. The mode of action of the imbalance may be through an actual or a conditional phosphorus deficiency affecting the anterior pituitary.

Finally, H. stressed that his comments must not be regarded as a criticism of grassland improvement. If improved practices contribute to the infertility problem, it must be solved in such a way that full use can still be made of these procedures.

Deas made brief mention of the effect on fertility of trace elements and vitamins A and E, and he had not found oral administration of manganese successful. The minimum requirements of phosphorus for an animal are still unknown and although fertility of cattle grazed on phosphorus deficient Scottish hills improves after feeding mineral supplements containing phosphorus, this may be due to improved condition of the animals and not to increased intake of phosphorus. He considered that intensive farming was, in the majority of cases, wrongly blamed for infertility and that the commonest cause is *V. fetus*, spread of infection being facilitated by constant interchange of bulls. He described the course of this infection in herds where the history of infertility resembled that attributed by Hignett to luteal deficiency.

Smith considered that nutrition and management may be at fault. He had noted that indigenous strains of cattle are more fertile. He considered that shortening of the period between calving and first service in an endeavour to produce winter milk lowers fertility. Two experiments, one at Shawan in the U.S.A. carried out by Casida and one by Laing at Bristol were quoted showing that early embryonic death may occur in apparently normal healthy cows.

Steele-Bodger quoted several instances of farms where heavy liming was associated with infertility and narrowing of the Ca : P ratio was followed by a high conception rate. Once only had he noted infertility associated with a high P_2O_2 intake. He suggested that iron and copper deficiencies are often associated with infertility. In general discussion on the paper, stress was laid by many speakers on the fact that the anterior pituitary gland may be overworked in the high yielding dairy cow with consequent effect on fertility. It was suggested by one speaker that androgens produced by stimulation of the adrenal cortex might limit excessive lactation and even cause sterility.

It was suggested that *V. fetus* infection transmission may be by mouth and not venereal.—M. B. COOPER.

HERWEIJER, C. H. (1951). De invloed van het tropische klimaat op de voortplanting der dieren. **[The influence of tropical climate on reproduction in animals.]**—*Hemera Zoa.* **58,** 146-168. [English, French and Indonesian summaries.] **1885**

In East Sumba (Indonesia) the maximum of sexual activity of horses and cattle is in the rainy season (Dec.–March). In horses sexual activity starts within a few weeks after the grass begins to grow (Dec.), for zebus and water buffaloes this period is at the end of the rainy season: Feb.–April.

Improvement of indigenous livestock will be possible if feeding can be adapted to higher demands.—C. A. VAN DORSSEN.

SAN MARTIN, M. (1950). La reproducción en la altura. **[Reproduction at high altitudes.]**—*Rev. Fac. Med. Vet., Lima.* **5,** 140-147. [English summary.] **1886**

This is a short summary of the literature on the subject. In general, it may be said that low atmospheric pressure has a depressant action on all aspects of reproduction, but other factors, such as low external temperature and nutrition, must be taken into consideration in assessing the causes of poor breeding results.

—I. W. JENNINGS.

QUINLAN, J., ROUX, L. L., VAN ASWEGEN, W. G. & DE LANGE, M. (1948). **Researches into sterility of cows in South Africa. The influence of: (i) dry rations, (ii) lack of exercise, and (iii) lack of sunlight on reproduction of beef heifers and cows.**—*Onderstepoort J. vet. Sci.* **23,** 269-347. **1887**

These observations on the reproductive histories of 27 Sussex-Afrikander females were carried out over a 14 year period. Groups A and B were tied in dark sheds, being only allowed out for water 20 min. twice daily, whereas Group C had unrestricted exercise and access to light during the day. In Group B, service was commenced six months later than in Group A. Details of management and methods of observation are given. There are 28 tables and 26 photographs of the animals.

There were no significant differences between the groups in respect of onset of sexual maturity, number of services required to establish pregnancy, birth weight or sex ratio of calves, interval between calving and conception, and body weight and condition.

There was no significant difference in length of gestation between the groups, though there was a significant reduction in length in all groups with advancing age, *i.e.*, over six years. Calf weights also fell with age. Delayed breeding did not affect reproduction.

—E. J. H. FORD.

KOCH, W. (1951). Die Diagnose der Sterilität bei Ziegen. **[Sterility diagnosis in goats.]**—*Tierärztl. Umsch.* **6,** 153-155. **1888**

In the female goat, the commonest cause of sterility is hermaphroditism. Where the external genitalia appear normal this condition is difficult to diagnose and K. has found it useful to inject or implant the animal with 100 mg. stilboestrol and if lactation is not induced the animal is a hermaphrodite. In the male goat sterility can be due to hermaphroditism, induration and blockage of the epididymis, testicular atrophy and reduced libido. Methods of clinical examination used for the diagnosis of these conditions are described.—A. T. COWIE.

ANON. (1951). Nordisk Veterinärförening för sexualfysiologi och sexualpatologi. **[Proposed Nordic Union for the study of the physiology and pathology of the sex organs.]**—*Nord. Vet.-Med.* **3,** No. 4. following page 362. [In Swedish.] **1889**

Since the Danish veterinarians Albrechtsen and Poulsen 50 years ago began to specialise in the reproductive disorders of the domestic animals the Scandinavian countries have been progressive in this work both in its practical and scentific aspects. To promote inter-Nordic co-operation the Nordic Veterinary Society for Sexual Physiology and Pathology was formed. [A report of the first Congress of the Society, held in Stockholm in August 1951 appeared in the *Vet. Rec.* **63,** 656.]—H. BOYD.

BRUNER, D. W. (1951). **Notes on genital infection in the mare.**—*Cornell Vet.* **41,** 247-250. **1890**

B. discussed diagnosis by cultural examination of cervical swabs and treatment by surgical and medicinal methods.

—E. J. H. FORD.

SZABÓ, L. (1951). **Improved sampling method for demonstration of local antibodies in the vagina.** [Correspondence.]—*Nature, Lond.* **168,** 171-172. **1891**

A sterile gauze tampon with string attached is inserted through a speculum into the vaginal fundus. After 30 min. it is withdrawn through the opened vulva and the vaginal secretion is extracted with saline for examination.

—JOHN SEAMER.

BLOM, E. & CHRISTENSEN, N. O. (1951). **Congenital absence of the epididymis, ductus deferens or glandula vesicularis (aplasia segmentalis ductus Wolffii) in the bull. Studies**

on pathological conditions in the testis, epididymis and accessory sex glands in the bull. II.—*K. VetHøjsk. Årsskr.* 6. 1951. pp. 1-64. [In English. Abst. from authors' summary.] **1892**

Eleven cases of segmental aplasia of the Wolffian duct are described. The condition is probably hereditary. In one case the affection was bilateral, in eight cases it was right-sided and in two cases left-sided. In two cases the vas deferens alone was lacking; in three the corpus and cauda epididymis were lacking and in six, including the one of bilateral affection the caput epididymis was almost completely lacking. As to the pelvic organs the left vesicular gland was absent in one case; in the bilateral case the pelvic glands were malformed and in some cases cystic, the excretory ducts of the seminal vesicles being shut off from the urogenital canal.

The symptoms, lesions, semen studies and histological findings are discussed and the normal passage of the spermatozoa to the cauda epididymis is considered. Excellent diagrams accompany the text.—H. Boyd.

Sánchez Belda, A. (1951). Identificacion del "badger face" entre los ovinos españoles. **[The "badger-face" factor in Spanish sheep.]** —*An. Soc. vet. Zootec. Madrid.* **5**, No. 3, pp. 29-32. [English, French and Spanish summaries.] **1893**

The "badger-face" coat character has been identified in four ewes of a Castilian flock.

—G. B. S. Heath.

Bentinck-Smith, J. (1951). **A congenital epithelial defect in a herd of Berkshire swine.** —*Cornell vet.* **41**, 47-51. [Author's summary copied *verbatim.*] **1894**

A congenital skin defect occurred in six males in four litters of pigs from a Berkshire herd. The defect was a failure in the development of the epithelium and hair follicles and differed from that seen in cattle in that there was no involvement of the mouth or esophagus. The lesion seemed similar to that reported by Götze.

Lewis, E. F. & Holman, H. H. (1951). **Haemophilia in a St. Bernard dog.**—*Vet. Rec.* **63**, 666-667. **1895**

A haemorrhagic diathesis, tentatively diagnosed as haemophilia, did not respond to liver extracts, vitamin therapy or administration of various minerals. Prior to euthanasia the blood was thoroughly examined. Both platelet count and prothrombin time were normal, but the clotting and bleeding times were considerably prolonged. H. inclines to the theory that the disease is due to the absence of a plasma factor which normally liberates thromboplastin from within the platelets.

—L. M. Markson.

See also absts. **1667** (artificial insemination in prevention of trichomoniasis); **1899** (twins); **1915** (problems of interest to veterinarians).

ZOOTECHNY

I. Ragsdale, A. C., Thompson, H. J., Worstell, D. M. & Brody, S. (1951). **Environmental physiology. With special reference to domestic animals. XII. Influence of increasing of temperature, 40° to 105° F on milk production in Brown Swiss cows, and on feed and water consumption and body weight in Brown Swiss and Brahman cows and heifers.** —*Res. Bull. Miss, agric. Exp. Sta.* No. 471. pp. 22. [Authors' summary and abst. slightly modified.] **1896**

II. Kibler, H. H. & Brody, S. (1951). **Environmental physiology. With special reference to domestic animals. XIII. Influence of increasing temperature, 40° to 105°F, on heat production and cardiorespiratory activities in Brown Swiss and Brahman cows and heifers.**—*Ibid.* No. 473. pp. 16. [Authors' summary and abst. slightly modified.] **1897**

I. This is a progress report on the effect of rising temperature 40° to 105° F. on feed and water consumption, body weight, and milk production in three high-milking 1300–1400 lb. Brown Swiss cows, three dry 1000 lb. Texas-bred Brahman (Indian evolved) cows, and six dry yearling heifers, daughters of these six cows.

The critical temperature in Brown Swiss cows for milk production, feed and water consumption, appears to be 85° F. Rising temperatures above 85° F. depressed the feed consumption in the milking Brown Swiss cows more than the milk production, with consequent loss in body weight. The fat percentage increased with decreasing milk production. The non-milking Brahman cows showed less conspicuous and higher critical temperature for feed consumption and body weight. The milking Brown Swiss cows decreased and the non-milking Brahmans increased their water consumption with increasing temperature. Opposite effects on water consumption were, however, observed in both the Brown Swiss and Brahman heifers. In brief, the water consumption tends

to decrease with decreasing milk production during increasing temperatures.

While the Indian-evolved cows may be more heat tolerant than the European-evolved cows, no such breed differences were observed in the yearling heifers of the Brahman and Brown Swiss breeds.

II. Data are presented on heat production (by the open-circuit respiratory exchange method), rectal temperature, pulse and respiration rates with rising environmental temperature, 40° to 105° F., at 5° to 10° F. intervals, for three high-milking (40–50 lb. milk a day), 1200 to 1400 lb. Missouri-bred Brown Swiss cows; three dry 1000 lb., Texas-bred Brahman (Indian) cows; three each of Brown Swiss and Brahman, 400–600 lb. heifers.

The effects of rising temperature on the various physiological reactions became critical (significantly changed from the normal levels at thermoneutrality) at the following approximate environmental temperatures for rectal temperature, pulse rate and heat production: 85° F. in the Brown Swiss cows, 100° F. in the Brahman cows, 95° to 105° F. in the Brown Swiss and Brahman heifers; for respiration rate, 70° F. in the Brown Swiss cows, 85° F. in the Brahman cows, 80° F. in the Brown Swiss and Brahman heifers. At 105° F. environmental temperature the average rectal temperatures were 107·6° F. in the Brown Swiss cows, 104·7° F. in the Brahman cows, 106·7° F. in the Brown Swiss heifers, and 105·8° F. in the Brahman heifers. The appetite, or feed consumption, in the Brahmans was greater at 100° to 105° F. than in the Brown Swiss, although their heat production was less.

While the differences between the reactions of the Brahman (Indian) and Brown Swiss (European) heifers were small, the differences between the two categories of cows were considerable. Were these differences between the cows due in part or in whole to the fact that the Brahman cows were dry and the Brown Swiss cows were heavily lactating and therefore heavily feeding? We shall not have a definite answer to the question of relative heat tolerance of European and Indian cows until we shall obtain either similar data on non-milking European cows or on heavily milking Indian cows.

These rather limited observations seem, however, to indicate that the Brahman heifers are more heat tolerant than the Brown Swiss; since at 105° F. they consumed more feed than the Brown Swiss heifers, yet had a lower rectal temperature and heat production.

THOMPSON, H. J., MCCROSKEY, R. M. & BRODY, S. (1951). **Environmental physiology. With special reference to domestic animals. XIV. Influence of temperature on insensible weight loss and moisture vaporization in Brahman, Brown Swiss, Holstein and Jersey cattle.**—*Res. Bull. Miss. agric. Exp. Sta.* No. 479. pp. 25. **1898**

The studies here reported are of great value to those concerned with the problem of milk production in hot climates and to physiologists interested in the problem of heat regulation. Cattle of various European breeds were compared with those of Indian breeds under strictly controlled conditions.

The value of the comparison in the case of cows is, however, vitiated as the authors point out, by the fact that the European breed cows were high milk producers while the Indian breed cows available were low yielders. As the authors themselves say "we shall probably not have a real insight into the breed differences in heat toleration until equally productive individuals of these categories of cattle have been measured quantitatively under the same conditions for their vaporization rates, as well as for their heat production." The results obtained are summarized as follows:—

Data are reported on the effect of temperature, 0° F. to 105° F., on insensible loss and moisture vaporization in heavily-lactating Brown Swiss, Holstein and Jersey cows; lightly lactating and dry Brahman cows; Brown Swiss and Brahman yearling heifers. The ratio of vaporized moisture to insensible loss increased linearly from near 60% at 0° F. to near 100% at 100° to 105° F. environmental temperature. The ratio of evaporative cooling to heat production increased approximately exponentially from about 10% at 0° F. to about 100% at 100° F. Prior to 80° F. the level and slope of this ratio was lower in man than in cattle; above 80° F. the slope of man increased sharply, and by 90° F. overtook that of cattle. The vaporization rate per unit surface area at various temperatures was virtually the same in lactating Holstein, Jersey and Brown Swiss cows and higher than for Brahmans prior to 90° to 95° F., when the curves of the two criss-crossed, with vaporization rates of 180–200 g. per sq. m. per hour or 1·8–2·0 lb. per thousand lb. body weight per hour. However, the ratio of evaporative cooling to heat production was approximately the same in Brahman and European cattle. The vaporization rates of Brahman heifers, regardless of the reference base used, were below those of very similar Brown Swiss heifers.—M.C.

HANCOCK, J. (1950). **Studies in monozygotic cattle twins. IV. Uniformity trials: grazing behaviour.**—*N.Z. J. Sci. Tech.* Sect. A. 32, 22-59. 1899

From observations on the grazing behaviour of six sets of monozygotic twins under New Zealand conditions, data were recorded under 11 headings and variations within and between sets discussed in each case.—E. J. H. FORD.

JOUBERT, D. M. (1951). **Criteria of growth and development in cattle.**—*Fmg. S. Afr.* 26, 339-346. 1900

Growth and development are defined. Factors affecting growth and development are discussed. Emphasis is given to the positive correlation between measurement of chest girth and weight. Developmental changes were calculated by measurement of body length, knee height and hock height where a definite ratio exists in relation to development.—R. A. HUCK.

STAHL, W. (1951). Die Knochenstärke des Schweines und ihre Bedeutung für Beurteilung und Leistung. **[Thickness of the bones in relation to productivity in pigs.]**—*Mh. Vet.-med.* 6, 216-220. 1901

It is reasonable to assume that some relationship exists between the weight of component parts of the animal body and that this relationship may vary with the breed and physiological condition of the individual or group. S. has reviewed this state in regard to the bacon pig, with particular reference to bone growth and muscle and fat content. Comparisons of tissue weight analyses in the different breeds of common bacon pig on the Continent are tabulated.—C. W. OTTAWAY.

HAMMOND, J. (1951). **The practical use of hormones in animal production.**—*Nord. Vet.-Med.* 3, 525-537. [In English.] 1902

Ovulation in domestic animals may be controlled by means of follicle stimulating hormone, luteinizing hormone and testosterone, and fertility increased by pregnant mare's serum. Milk secretion and fat content are increased by thyroid extracts or iodinated casein, while anterior pituitary extracts, thyroid, thiouracil and thiourea may control fattening of animals.

—F. R. HARRIS.

SPERLING, F. G. & FABER, R. F. (1951). **Wing tip amputation in a flock of wild ducks.**—*Vet. Ext. Quart. Univ. Pa.* No. 124. pp. 17-19. 1903

Without anaesthesia, the wing tip external to the most distal joint, but excluding the small appendage on the leading edge, was removed with scalpel and bone forceps. Only one wing was so treated.—G. B. S. HEATH.

KNOOP, C. E. & MONROE, C. F. (1950). **Influence of pre-milking preparations of cows' udders upon the let-down of milk.**—*J. Dairy Sci.* 33, 623-632. 1904

Two experiments were made, over periods of eight days, on pure-bred Holstein and Jersey cows in the early and middle stages of lactation. (a) Three small groups of cows were milked in the summer, spring and winter seasons respectively. Before milking, their udders were variously washed with towels wrung from cold water and water at 100° and 132° F. The temperature of the water used appeared to have little effect on the let-down of milk, but it was found that 132° F. was too hot. (b) It was established that the average milking time could be reduced by one min., equally by rubbing the udders for 10–15 sec. with a cold, damp cloth or a cloth wrung from water at 120° F. and by using a strip cup in conjunction with the last-mentioned treatment. In the above experiments, the milking machine was used at 48–52 pulsations per min., with a vacuum of 15 in. of mercury.—JOHN C. COWNE.

FURLONG, J. R. (1951). **The pressure-baling of line-dried East African goat skins with reference to cracking.**—*Col. Plant anim. Prod.* 2, 23-25. 1905

East African goat skins dried over lines and pressure-baled in a humid atmosphere do not show grain cracks on being tanned.

—S. E. FOX.

FURLONG, J. R. (1951). **Production and marketing of Colonial hides and skins.**—*Col. Plant anim. Prod.* 1, 271-283. 1906

The curing of cattle hides and goat skins in E. and W. Africa is reviewed. Skins are preferably cured by sun-drying by suspension. Uses of these skins for leather manufacture are outlined: marketing methods are described.

—S. E. FOX.

SCOTT, J. P. *et al.* (1950). **Methodology and techniques for the study of animal societies.**—*Ann. N.Y. Acad. Sci.* 51, 1001-1122. 1907

In November, 1948, a conference on methodology and techniques for the study of animal societies was sponsored jointly by the New York Academy of Sciences and the New York Zoological Society, and the proceedings have now appeared in the form of 12 papers. The main theme, the study of animal behaviour on the social level of integration, is dealt with from a variety of aspects, including general

plans and methodology of field studies (C. R. CARPENTER); social behaviour of dogs and wolves (J. P. SCOTT); physiological reaction to Arctic conditions (L. IRVING); measurements of physiological reactions of unrestrained animals (L. J. GOSS); the comparative behaviour of three species of grouse (J. W. SCOTT); social life and the individual among vertebrates (N. E. COLLIAS); the isolation of factors of learning in field and laboratory studies (B. F. RIESS); bird behaviour under natural conditions (J. T. EMLEN); and the study of wild animals under controlled conditions (J. B. CALHOUN). In addition there is a foreword by J. P. SCOTT and also a contribution on the relationship between observation and experimentation in the field study of behaviour by T. C. SCHNEIRLA.

The symposium contains much that is of general interest to the veterinarian. The surprising conclusion is drawn by Scott that domestication does not appear to have produced anything new in dog behaviour. The patterns of behaviour of dogs in human society are stated to be the same as those of wolves in wolf society. There are many authenticated cases in which wolf cubs have been taken away from their parents and made into pets and working animals. It has been difficult to distinguish such animals from dogs. The highly developed patterns of social behaviour in the wolf, and the similarity of many of these patterns to those of man, facilitate mutual social adjustment between the two species. Similarities include allelomimetic behaviour (with consequent coordinated group activity), epimeletic behaviour (*i.e.*, the giving of care and attention), and etepimeletic or attention-seeking behaviour, prominently developed from early infancy or early puppyhood.

J. L. FULLER describes the use of the radioinductograph which, although still in the developmental stages, has already proved of value in the recording of certain physiological reactions (*e.g.* cardiovascular and respiratory records) in unrestrained animals. The principle is based upon the action of physiological activity as a means of modulating a radio-frequency signal. The signal is detected and amplified by a receiver the output of which appears as a direct-current potential, which is proportional to the frequency over a range of about 15 kilocycles per sec.—ALASTAIR N. WORDEN.

MUNN, N. L. (1950). **Handbook of psychological research on the rat. An introduction to animal psychology.** pp. xxvi + 598. Boston, New York, Chicago, Dallas, Atlanta & San Francisco: Houghton Mifflin Co. $7.50. **1908**

The author published in 1933 "An Introduction to Animal Psychology", which comprised an introduction to the problems and methods of animal behaviour and a survey of research on rat behaviour. Realising that it was no longer feasible to combine these two aspects in one volume, the author has now chosen to write a complete survey of psychological research on the rat. In this he has succeeded admirably, and L. Carmichael, the Editor of the series, describes the work as "a monument of scholarship in its field". The layout and the lucid presentation of material enable the reader to refer easily to any aspect of the subject, and it is pleasing to be able to verify that the relevant British literaure has been covered in detail.

The book is divided into ten sections, viz. (1) introduction; (2) unlearned behaviour; (3) general activity; (4) motives, emotions and hoarding; (5) sensory processes; (6) the role of sensory processes in maze behaviour; (7) the learning process; (8) some aspects and conditions of learning; (9) systematic psychology; and (10) abnormal and social behaviour. There are 180 well-chosen illustrations and 15 tables.

In the case of the one aspect with which the reviewer is familiar as a result of personal investigation, the current state of knowledge is fairly and critically outlined. In a rapidly growing and controversial subject there are bound to be criticisms of certain of the author's interpretations, but generally speaking he has clearly dealt enthusiastically and yet objectively with a vast amount of literature.

—ALASTAIR N. WORDEN.

See also absts. **1885** (tropical climate and reproduction); **1886** (high altitudes and reproduction); **1893** ("badger-face" coat in sheep); **1939** (restraint of animals).

TECHNIQUE AND APPARATUS

BROWN, J. H. & WOOD, R. M. (1948). **A method for obtaining massive growth of bacteria in fluid media.**—*Science.* 107, 402. **1909**

This method which utilizes a cellulose sponge of coarse texture, mounted in the upper part of a 250 ml. centrifuge bottle, is useful for preparing *Brucella* antigen and for collecting a large amount of bacterial sediment for agglutinin absorption. The yields from a given amount of broth are several times greater than

those from the same amount in bottles without the sponge. The method is described in detail, with two diagrams.—W. R. BETT.

WETZEL, R. (1951). Verbesserte McMaster-Kammer zum Auszählen von Wurmeiern. **[A modification of the slide used by the McMaster Institute, Australia, for counting helminth ova.]**—*Tierärztl. Umsch.* **6,** 209-210. **1910**

A modified McMaster-chamber for quantitative estimations of helminth ova in faeces is described. The glass components are held together by acid-resistant putty. The cover-glass is detachable and has three calibrated sections each of a sq. cm.; it is applied just before the counting chamber is used, and is clamped down on both sides. The best position for the cover-glass is illustrated. W. claims that the improved counting chamber is more durable, and can be cleaned without risk of breakage.—ANITA M. MANDL.

FURNESS, G. & GAZE, H. W. (1952). **A method of preparing individual sterile pipettes.**—*J. gen. Microbiol.* **6,** 149. [Authors' summary copied *verbatim.*] **1911**

Tubes of Kraft paper which can be used repeatedly up to six times are used for encasing individual pipettes.

KIAER, W. & OLSEN, A. (1950). **A new technique for the removal of the spinal cord [of cattle] at autopsy.**—*Acta path. microbiol. scand.* **27,** 497-500. [In English.] **1912**

A wooden block is placed under the back of the carcass, and the bodies of the vertebrae are sawn through, from the ventral aspect, in a sagittal plane. Each of the intervertebral discs is cut through horizontally by means of a broad chisel. It is then easy to break all the bodies of the vertebrae in a sagittal plane, leaving the spinal cord exposed. Spinal ganglia may be removed at the same time. Illustrations of the most suitable instruments are provided.

—ANITA M. MANDL.

RADELEFF, R. D. (1950). **Omentectomy of cattle for studying insecticide residue in the body.**—*Vet. Med.* **45,** 125-128. **1913**

A description is given of the technique of omentectomy in cattle for the purpose of analysis for residues of insecticides used, together with some details of the results of the operation on 500 animals; there were two deaths. The operation can be repeated without damage to health.

See also absts. **1580** (anthrax spore vaccine preparation); **1645** (cultural methods for growth of *A. bovis*); **1658** (Pfeiffer's test); **1686** (electron microscopy of red cell membranes in experimental F. & M. disease); **1687-1688** (cultivation of F. & M. disease virus); **1814** (specimens for laboratory examination); **1867** (apparatus for measuring density of bull semen); **1868** (prolongation of viability of spermatozoa); **1878-1879** (pregnancy diagnosis); **1891** (demonstration of local antibodies in the vagina); **1903** (amputation of wing tips in wild ducks); **1907** (study of animals); **1938** (book, technique of organic chemistry); **1939** (book, restraint of animals).

MISCELLANEOUS

ANON. (1951). **The application of scientific methods to industrial and service medicine. (Proceedings of a Conference held from March 29th to March 31st, 1950).**—*Med. Res. Coun.* pp. 112. London: H.M. Stat. Off. 3s. **1914**

This report is divided into seven chapters as follows: — Opening address; Scientific method in field surveys; The investigation of health hazards: I.; The improvement of human performance by laboratory studies: I.; The improvement of human performance by laboratory studies, II.; The investigation of health hazards: II.; Closing Session: lessons of the Conference.

RUST, J. H. (1951). **Genetic, embryologic, and neonatal problems related to ionizing radiations of interest to veterinarians.**—*J. Amer. vet. med. Ass.* **119,** 103-107. **1915**

Deleterious effects upon spermatozoa, eggs and new-born young of amphibia and small animals of ionizing radiations such as might occur after atomic explosions have been shewn. Similar effects upon large animals might be apprehended.—R. MARSHALL.

GLOAG, J. (1950). **How to write technical books, with some pertinent remarks about planning technical papers and forms.** pp. x + 159. London: George Allen & Unwin Ltd. 12s. 6d. **1916**

This book, which is written in a very readable and somewhat novel style, gives useful advice about the planning and writing of technical books and papers. Other chapters are devoted to the relations between publisher and author, preparation of material for the printer, book production, preparation of illustrations and indexes, and proof reading. An appendix gives a short list of books which illustrate the points made by the author in the text and also a list of reference books.—C.M.S.

AUSTRALIA. (1949). **Commonwealth Scientific and Industrial Research Organization. First Annual Report for the year ending 30th June, 1949.** pp. 139. Canberra: L. F. Johnston, Govt. Printer. Items of veterinary interest pp. 33-50, 52, 66 & 112-137. **1917**

This is the first annual report of the Organization named above and continues the series of reports of the work of the Council for Scientific and Industrial Research. [For the 22nd and last report of the Council, see *V.B.* **20, 2952.**].

Studies on MASTITIS in cattle include trials with penicillin with a number of adjuvants, and the use of hypochlorite in preventing the spread of *Str. agalactiae* by the milking cups. The "short thermal test" continues to be a valuable tool in research on TB.; its application to animals other than cattle is being studied. A trial was begun to determine whether intracaudal vaccination using "strain 19" is as effective as subcutaneous vaccination in protecting cattle against infection with *Br. abortus*. Attempts to immunize against BOVINE CONTAGIOUS PLEURO-PNEUMONIA with non-living vaccines were unsuccessful. It appeared that previous caudal vaccination with *Br. abortus* "strain 19" interfered with the serological response to BOVINE CONTAGIOUS PLEURO-PNEUMONIA vaccination. However, there was no interference with development of resistance to the latter disease.

Foot louse (*Linognathus pedalis*) was eradicated from sheep by spray and footbath containing 0·007–0·15% gamma benzene hexachloride (B.H.C.). Crude B.H.C. (13% gamma isomer) in doses of 0·25–1·5 g. per kg. body weight controlled *Damalinia ovis* infestations, but there were toxic effects on the sheep. Methods for preventing BODY STRIKE BY SHEEP BLOWFLY were studied. A 2% D.D.T. suspension, applied as a spray, showed greatest promise. A 1% concentration of B.H.C. was also useful. Further work on taxonomy confirmed the validity of the species *Lucilia cuprina* and *L. sericata*. Observations on *Boophilus microplus* include biological, ecological and toxicological studies. In bio-assay tests it was found that the toxicity of D.D.T. to larval ticks varied considerably depending upon the formulation, a colloidal suspension containing 1 part in 7 million being as effective as an alcoholic solution containing 1 part in 30,000. Colloidal suspensions of D.D.T. were more toxic to tick larvae than any other acaricide tested, whereas parathion (E.605) appears to be more effective against adult ticks. D.D.T. was less effective in inhibiting the production of viable eggs than several other insecticides.

Under laboratory conditions, the length of the pre-oviposition period, the number of eggs produced, the incubation period, and the time during which eggs are deposited, appeared to be governed by temperature rather than relative humidity. However, relative humidity appeared to be the chief factor affecting viability of eggs and longevity of larvae.

Spraying a tick infested pasture with 1·47 lb. *p.p*[1]. *D.D.T.* per acre as a 0·1% colloidal suspension gave practically complete control of larvae for 6–8 days.

Other studies relating to cattle tick include analysis of dipping fluids and bacterial oxidation of arsenical dipping fluids.

Planorbis spp. are the intermediate hosts of *Paramphistomum* spp. in cattle. Several species of this trematode have been recorded.

Studies on the epidemiology of PARASITIC GASTRO-ENTERITIS IN CALVES were continued. In sequence, according to age, calves became infested with *Strongyloides, Cooperia, Haemonchus, Trichostrongylus,* and *Ostertagia, Bunostomum,* and *Bosicola. Cooperia* larvae were recorded in faecal cultures first at 3–4 weeks, *Haemonchus* larvae at 6–8 weeks, and *Bunostomum* and *Bosicola* at 10 weeks. With each species the infestations increased to a maximum, then gradually declined and thereafter remained at a very low level, although infective larvae were plentiful and infestations of younger calves continued to increase. Infestations in adult cattle are in general on a low plane, and it appears that adult cattle may be of little importance as reservoirs of infestation for calves, except in the case of *Haemonchus*. Studies on anthelmintics suggested that phenothiazine was less effective against *Chabertia ovina* than against *Oesophagostomum columbianum. O. columbianum* passed by sheep dosed with phenothiazine were alive. Transfusion to two sheep of 200 ml. of blood from a third sheep, dosed 24 hours before with 50 g. phenothiazine, had no anthelmintic effect against *Haemonchus contortus,* but phenothiazine derivatives were found in the urine of the transfused sheep. Hexachlorethane administered into the rumen was highly effective against *H. contortus,* had slight efficiency against *Trichostrongylus* spp. but very little effect on *O. columbianum*. It was effective against adult amphistome flukes. Lead arsenate, 0·5 to 2·0 g. into the rumen, was effective against *H. contortus* but not against *O. columbianum*. Field observations that sheep acquire an age resist-

ance to *Trichostrongylus* spp. were confirmed by a laboratory trial in which sheep 21 and 25 months old had marked resistance, whereas sheep 12 and 15 months old were susceptible. "Self-cure," similar to that seen in *Haemonchosis* was noted in some sheep with *Trichostrongylosis*. At the Regional Pastoral Laboratory at Armidale (N.S.W.) the efficiency of winter grazing on green feed oats in reducing infestation of *O. columbianum* was confirmed. In a similar trial at the McMaster Field Station near Sydney this effect was not observed, and in field trials in Tasmania sheep grazed green feed oats did not show reduced infestations with *C. ovina* or *O. venulosum*.

Serological studies on resistance and immunity to nematode infestations revealed that eggs, larvae and immature adults of *H. contortus* yield potent antigens, whereas mature adults do not. Both larval and adult *Trichostrongylus* spp. yield potent antigen. These findings are in keeping with the observations that the main antibody response to *H. contortus* occurs shortly after the administration of larvae, whereas both larval and adult forms of *Trichostrongylus* spp. stimulate antibody formation. Older sheep (14–18 months) showed an earlier response to *Trichostrongylus* spp. than younger sheep (9 months). When infective larvae of *H. contortus* are administered to sheep already infested with either *H. contortus* or *Trichostrongylus* spp. the titre of complement-fixing antibody rises and the existing infestation is eliminated or egg count is suppressed. Larvae of *Trichostrongylus* spp. have a similar effect upon *Trichostrongylus* spp. infestations but not upon *H. contortus*. Intramuscular injection of alum-precipitated vaccine made from *H. contortus* larvae gave a marked serological response but did not confer immunity on the host. Intravenous injection of formolized suspensions of ground larvae gave a marked antibody response and there was some evidence that existing infestations with *H. contortus* were reduced. At the McMaster Laboratory studies were continued on the biochemical character of the serologically active lipoid fraction of *H. contortus*, mode of action of phenothiazine by means of a sample of the drug made from radioactive sulphur, intermediary metabolism of nematode parasites, relative importance of aerobic metabolism in small nematodes of the alimentary tract, and the biological significance of haemoglobin in nematode parasites.

Moderate amounts of urea may be converted into protein by ruminal micro-organisms and utilized for wool production provided it is fed with a relatively large amount of starch or simple saccharides.

The Anaemia of Cobalt Deficiency in sheep has many features in common with Addisonian pernicious anaemia and other macrocytic anaemias of nutritional origin, but it does not respond to massive doses of concentrated liver extracts or pure anti-pernicious anaemia factor (vitamin B_{12}). Large doses of pteroylglutamic acid were also ineffective. Administration of cobalt intravenously was without effect. Daily doses by mouth of 0·05 mg. cobalt prevented Cobalt Deficiency in sheep grazing on a deficient terrain. Extensive studies have been carried out on Copper Deficiency and Excess, and their relationships with molybdenum. Other nutritional studies include rumen digestion, drought feeding, vitamin A, vitamin D and grazing on green feed oats, Cobalt Deficiency in the rat, physiological function of cobalt, amino-acid constitution and chemical structure of wool from copper-deficient sheep, effect of dressing pastures with copper and cobalt, Copper Deficiency and crimp and pigmentation of wool, and dried liver and Cobalt Deficiency.

Lesions indistinguishable from Sheath Rot (Balanitis) developed in two of three sheep fed a high-protein diet; in the third there was extensive, persistent ulceration about the orifice without internal involvement of the prepuce.

The toxicity of large rations of wheat was due to production of lactic acid. The toxic dose of crushed wheat was 75–80 g. per kg. body weight (about 6 lb. for an 80 lb. sheep). Under field conditions smaller doses are sometimes toxic. Marked changes in the microflora of the rumen and intestine occur, with virtual replacement by lactobacilli. Alimentary tract contents may contain 1% lactic acid and ruminal pH may fall to 4·2.

Studies on Chronic Fluorosis in sheep given drinking water containing 2·5–20 p.p.m. fluorine were concluded. At the highest level the incisor teeth were mottled and the molars were mottled and showed selective wear.

Methods for determining sulphonamides were modified and used for the estimation of aromatic amines in the urine of cattle. Differences were recorded in samples of urine from cattle from different regions during studies on Haematuria Vesicalis.

Ingestion of the plant, *Heliotropium europaeum*, may play an important part in the syndrome of Toxaemic Jaundice in Sheep. The plant contains substances which cause liver damage. An alkaloid, lasiocarpine, was isolated. Damage is slow and progressive and many sheep die from an atrophic fibrosis of the liver. Some develop the haemolytic crisis of

CHRONIC COPPER POISONING. The action of molybdenum in suppressing copper storage in the liver was confirmed, and it was found that if sheep have grazed *H. europaeum* a supplement of molybdenum brings about a higher death rate by increasing liver damage.

Physiology of reproduction, breeding and genetics, biology of skin and wool growth, and neo-natal mortality of lambs were also studied.

General studies on cattle include the development of a carcass appraisal method, feeding of beef cattle and development of hybrid dairy cattle (zebu and Jersey, Illawarra Milking Shorthorn and Red Poll crosses). Other items of veterinary interest include studies on sandflies (*Simulium* spp.), insect physiology and toxicology, insect population dynamics (using *Lucilia cuprina*), weed taint in butter, wild life survey (special observations on rabbits), and grazing trials with sheep and cattle.

The report lists the locations and personnel of divisions, laboratories, and field stations, and there are details of expenditure.

—H. McL. GORDON.

NEW ZEALAND. (1951). **Department of Agriculture. Annual Report for year 1950-51.** [HOLYOAKE, K. J.] [Contains Report of the Animal Research Division by FILMER, J. F. pp. 28-54.] pp. 100. Wellington: R. E. Owen, Govt. Printer. 2s. **1918**

The following conditions have been diagnosed for the first time in New Zealand: STIFF LAMB DISEASE, LEPTOSPIROSIS in sheep and calves, *Vibrio foetus* ABORTION IN EWES, RICKETTSIAL ABORTION in ewes (the same *Rickettsia* has been found in cases of EPIDIDYMITIS in rams), scrotal mange due to *Chorioptes bovis* var. *ovis*, HAEMORRHAGIC SEPTICAEMIA in cattle, and Q FEVER in a goat imported from England.

Three outbreaks of poisoning of cattle by "fat hen" (*Chenopodium album*) appeared to be associated with the oxalate content (soluble oxalate, expressed as potassium oxalate: 7·22%) of this plant.

When cattle graze pasture which has recently been top-dressed with North African phosphate or superphosphate, an immediate and serious drop in milk yield occurs. A fraction of the phosphate rock, not yet identified, causes this drop.

The oestrogen content of grasses and of subterranean clover has been estimated at different stages of growth. A rachitogenic factor has been demonstrated in green oats and in young Italian rye-grass.

PHOTOSENSITIZATION has been produced in rats and g. pigs by extracts of dried *Panicum miliaceum* containing pigments derived from or related to chlorophyll. The bacterial content of bull semen has been studied. The influence on cattle of exposure to a tropical climate is being studied using eight pairs of identical twin calves, one of each pair being kept in New Zealand and the other in Fiji. At the time of reporting the experiment had lasted 18 months and no marked differences had yet been observed except in respect of water consumption. A lifetime study of the effects of rotational grazing as compared with grazing on fixed paddocks is being conducted. Heifers on a high plane of nutrition were more difficult to get in-calf than those on a lower plane, but improvement was obtained by lowering the plane of nutrition temporarily for a month before mating. Milking methods and the physiology of milk ejection are the subject of other experiments. Experimental evidence was obtained which supported a belief held by farmers that the ingestion of *Cupressus macrocarpa* caused ABORTION in cows. Zinc chromate paste as used by electrical engineers proved toxic to cattle, the lethal dose being 10–12 oz. Black pigmentation in new growth of sheep's wool was prevented by feeding extra molybdenum when the diet had a normal copper content.—G. B. S. HEATH.

INDIA, ORISSA. (1949). **Annual Administration Report of the Civil Veterinary Department, Orissa, for the year 1947-48.** [SINGH, G. B.] pp. 21 + xxvii. Cuttack: Orissa Govt. Press. Rs. 0-15-6. (1s. 5d.) **1919**

The staff consisted of 11 gazetted officers including the Director, 2 Veterinary Inspectors, 38 Veterinary Assistant Surgeons, 77 Stockmen and 40 others.

Some neighbouring States were merged with the Province and veterinary aid had to be organized in the ceded areas. Twenty students were deputed for training in different Veterinary colleges in India, and 33 were undergoing training as stockmen.

Forty-one bull centres operated in the Province and 1,115 cows and 170 buffalo cows were served by approved bulls.

Six research schemes were in progress in the Province: (1) Veterinary Investigation, (2) Sheep and goat diseases, (3) Poultry diseases, (4) Improvement of sheep and wool in Orissa villages and establishment of a wool analysis laboratory, (5) Improvement of goats, and (6) Balanced rations for cattle.

During the year 7 veterinary hospitals and 35 field dispensaries were functioning. Details of their work are given.

Deaths from contagious diseases were on the decline and the health of livestock was satis-

factory. Altogether 316,643 animals were protected against contagious diseases by preventive inoculations compared with 310,464 in the previous year. Experimental anti-RINDERPEST serum and HAEMORRHAGIC SEPTICAEMIA vaccine prepared at the Serum Institute at Cuttack did not reach the required standard for want of facilities and the Institute confined its activities to the production of goat tissue vaccine only.

—M. K. SREENIVASAN.

PAKISTAN, SIND. (1948). **Annual administration report of Civil Veterinary Department, Sind, for the year 1947-1948.** [MOHEY-DEEN, M.] pp. 19. Karachi: Government Press. **1920**

Equine and bovine mortality was 4,266 as compared with 14,899 in the previous year. RINDERPEST was much less prevalent probably as a result of the large numbers immunized in 1946-47.

Veterinary Dispensaries were increased from 37 to 41 during the year. 46,421 cases were treated and 5,589 animals castrated.

The field staff treated 40,990 cases and vaccinated 59,155 cattle against RINDERPEST.

Owing to the disturbed state of the Indian Peninsula the non-Muslim staff migrated to the Indian republic but were later replaced to some extent by refugee Muslims from India. There is still a serious shortage of candidates for graduate veterinary posts.

Tables show various details of the department's work in addition to those given above.

—J. A. GRIFFITHS.

PAKISTAN, SIND. (1948.) **Scheme for the investigation of poultry diseases in the Province of Sind. Summary of the Assistant Disease Investigation Officers. Annual report for the year from 1st April 1947-March 1948.** [SHAIKH, I. Y.] pp. 11. Karachi: Government Press. **1921**

This is a summary of the routine poultry disease control work by the Assistant Veterinary Investigation Officer for Poultry diseases in Sind. Mention is made of the successful use of bovine HAEMORRHAGIC SEPTICAEMIA serum in doses of 3–5 ml. for the treatment of ducks for PASTEURELLOSIS. SPIROCHAETOSIS is recorded in domestic fowls, ducks, turkeys and geese.

—J. A. GRIFFITHS.

BASUTOLAND. (1947). **Annual Report of the Department of Agriculture for the year ending 30th September 1947.** [LECKIE, W. G.] pp. 28. Basutoland: Morija Printing Works. **1922**

Four fifths of Basutoland is mountainous and there are practically no natural growths of timber. The only fuel available is dried cowdung. The average rainfall is 29·0 in.

There were two outbreaks of ANTHRAX and two of BLACKLEG. ANAPLASMOSIS is widespread; 712 doses of vaccine were used. EQUINE MANGE is endemic, gammexane dips are replacing the bulky lime and sulphur dipping materials. HELMINTH INFESTATIONS in sheep and goats are treated under statutory powers, all medicines being supplied at cost price. 7,429 Merino rams have been imported since 1935. There are also 206 bulls, mainly Africanders, in use at stud centres or on loan. There are 23 stallions mainly Thoroughbred and 23 donkey stallions for mule breeding. A Large Black boar and four sows and a Tamworth boar are kept at the pig breeding centre at Maseru.

—J. A. GRIFFITHS.

NIGERIA. (1948). **Annual Report of the Veterinary Department, 1946.** [MARSHALL, R. S.] pp. 27. Lagos: Govt. Printer. [9d.] **1923**

Staff shortage was aggravated by difficulties in obtaining modern equipment and this has hampered the first stages of development schemes.

There were 178 new outbreaks of BOVINE CONTAGIOUS PLEURO - PNEUMONIA involving nearly 20,000 cattle. The situation is a cause of grave concern. All calves on government farms were vaccinated against BOVINE CONTAGIOUS ABORTION with Strain 19 between four and eight months of age and also heifers three months before their first service. In a limited test of Fulani-owned herds with a history of abortions, 100 blood samples were negative.

Satisfactory results were not obtained with phenanthridinium compounds against bovine TRYPANOSOMIASIS. The tartar emetic treatment introduced into Nigeria in 1929 is still being used: 19,094 cattle were so treated.

Sporadic outbreaks of F. & M. DISEASE occur, usually in a mild form. The disease is dealt with by quarantine and the artificial spread of the infection by swabbing the mouths of healthy animals with infective material. The use of vaccines against FOWL CHOLERA, FOWL TYPHOID and FOWL POX, has been most successful if used twice a year. One injection of 1 ml. of 10% acetylarsan often cures SPIROCHAETOSIS. BLACKLEG vaccine was given to 940,848 cattle, ANTHRAX vaccine to 426,861 head, BOVINE CONTAGIOUS PLEURO-PNEUMONIA vaccine to 215,137 head and HAEMORRHAGIC SEPTICAEMIA vaccine to 12,296 head. 6,420 goats were vaccinated against CAPRINE CONTAGIOUS PLEURO-PNEUMONIA. 811,200 cattle were inoculated with RINDERPEST goat virus and 26,805 cattle with RINDERPEST spleen vaccine.

30,954 cattle, 938 sheep and 27,617 goats were castrated. Treatments included FOWL CHOLERA 652; FOWL TYPHOID 700; SPIROCHAETOSIS 28; FOWL POX 1,223; HELMINTH INFESTATION, cattle 40,419; sheep 12,291; goats 19,461; treatment of TRYPANOSOMIASIS (bovine) 19,094, with tartar emetic.

Specimens sent in to the Laboratory by the field staff totalled 2,741 and 2,722 blood serum samples for the CONTAGIOUS ABORTION agglutination test.

Twenty-two out of 44 specimens received from Enugu town abattoir were positive for TB. These slaughter cattle originate from Cameroons Province, where TB. has been endemic since it was introduced many years ago, during the German régime, by infected cattle imported from Europe. One positive case was sent in from Kátsina Province. One case of AVIAN TYPE TB. was found in a flock at Vom Laboratory. Only nine positive cases of BLACKLEG were diagnosed: eight in Plateau Province and one in Katsina Province.

PROTOZOAN DISEASES diagnosed in 161 blood smears included *Babesia motasi* 1; *B. canis* 48; *B. caballi* 2; *B. equi* 18; *B. bigemina* 21; *Trypanosoma brucei* 3 (one in a cat); *T. vivax* 20; *T. congolense* 31 and *Anaplasma marginale* 17.

Of 28 brains examined for RABIES 18 were positive to histological examination and small-animal inoculation; 17 were from dogs and one from a cat. Other conditions diagnosed included *Aspergillus fumigatus* in a turkey, STRANGLES in horses at Kano, ACTINOBACILLOSIS in a bull—(ACTINOMYCOSIS occurs rarely); EPITHELIOMATA in horses.

A total of 2,615,705 doses of vaccine were produced. These included BLACKLEG 1,222,800; ANTHRAX 461,200; BOVINE CONTAGIOUS PLEUROPNEUMONIA 373-650; HAEMORRHAGIC SEPTICAEMIA 39,250; RINDERPEST spleen vaccine 25,950; RINDERPEST desiccated goat virus 461,625; GOAT PNEUMONIA vaccine 14,150; BOVINE CONTAGIOUS ABORTION vaccine 250; FOWL CHOLERA 5,050; FOWL TYPHOID 5,050 and FOWL POX 6,730.

Laboratory routine involved the examination of 17,751 specimens, mainly of cattle blood smears for TRYPANOSOMIASIS.

RINDERPEST virus has now been passaged to the 591st generation. A test with 12 susceptible yearlings showed that the thermal reaction is in 72 hours and that the clinical reaction averaged 7·4 days. All animals giving a high thermal reaction had diarrhoea within 7–10 days. This lasted about 7 days. All animals recovered and there were no relapses to *B. bigemina* or *Anaplasma* infection.

Of 2,722 blood tests for BOVINE CONTAGIOUS ABORTION 9·2% were positive, 12·2% doubtful and 78·5% negative. Most of these were of cattle on the various stock farms. Only 99 of them were from nomadic herds and these were negative.

Vaccination intradermally of 0·2 ml. of Strain 19 vaccine (eight hundred million organisms per ml.) is the method used in immunizing calves. Research on *Brucella agglutinins* present in vaginal mucus suggest that a new test may become available for diagnosing a *Brucella* infection.

Experimental treatment of cattle artifically infected with a virulent strain of *T. congolense* was carried out with dimidium bromide and also phenanthridinium 1553. Details of the experiments are given. The results were not satisfactory in the doses given. PHOTOSENSITIZATION took place in five animals treated with dimidium bromide 2 mg. per kg. body weight in 2% solution. Dermatitis appeared 51, 49, 49, 49 and 48 days after treatment respectively. All these animals died. PHOTOSENITIZATION also occurred in healthy yearling cattle given the drug intramuscularly. This solar dermatitis is confined to the white animals, the zebu cattle of the nomadic Fulani. The drug is not effective when given prophylactically against infection by *T. congolense*. Degenerative changes were found P.M. in parenchymatous organs of animals that died. There was severe anaemia and emaciation.

Details are given of the work of the Veterinary School.—J. A. GRIFFITHS.

NORTHERN RHODESIA. (1951). **Department of Veterinary Services. Annual Report for the year 1950.** [HOBDAY, J.] pp. 27. Lusaka: Govt. Printer. 1s. 1924

The policy of the Department is to foster the livestock industry, promote its growth and productivity and assist in the organization of livestock products. Importation of beef cattle reached the record figure of 31,000 head and 70,000 hides were exported.

The territory in the main remained free from contagious disease. More TB. than was anticipated was discovered, but the incidence was not alarming, though a feature was the large number of no-lesion reactors.

Phenanthridinium continues to be the drug of choice for TRYPANOSOMIASIS and some 17,000 doses were issued. The value of this drug in allowing the movement of cattle from infected areas after one injection cannot be overempha-

sized. EAST COAST FEVER is still present, but regular dipping has reduced mortality to negligible proportions.

An outbreak of F. & M. DISEASE in May was eradicated by the wholesale inoculation of 40,000 cattle. This outbreak provided an opportunity to test a field virus which had been under study for some years. A satisfactory result is recorded. RABIES outbreaks have been reduced by 50%, vaccination against the disease being carried out.

The main part of the report deals with Research and the Demonstration Services. The number of smears examined increased by 363 over the previous year. Vaccines were purchased for the common diseases from the Onderstepoort Laboratories, but 8,000 doses of RABIES vaccine were produced at Mazabuka by the Semple Kasauli method. Considerable attention was given to research into drugs used to control TRYPANOSOMIASIS and on tick eradication methods. In Animal Husbandry, considerable experiments on breeding were conducted.

Five appendices dealing with livestock population, imports and exports of animals and animal products are also included.

—D. S. RABAGLIATI.

ANON. (1951). **Committee for Colonial Agricultural, Animal Health and Forestry Research Sixth Annual Report (1950-1951).**—*Colonial Research* 1950-1951. pp. 137-170. [London: H.M. Stat. Off. 6s. 6d.] **1925**

EAST AFRICA. Early in 1951 building commenced at Muguga on the Animal Husbandry Division, a joint responsibility of the East African Agricultural and Forestry Organisation with the East African Veterinary Research Organisation, which was granted a Colonial Development and Welfare Research grant of £263,000 for buildings and equipment for an Animal Diseases Section and a Biological Production Section. It was the intention of the East African High Commission that the production of vaccines and sera should revert to the E. African Veterinary Organisation as soon as it could take over this responsibility. It is anticipated that the construction and equipment of the new centre will be completed late in 1952 when the organisation will take over fundamental research on major disease problems of East and West Africa.

H. R. Binns has been appointed Director of the E.A. Veterinary Organisation. Research work is already in progress on TRYPANOSOMIASIS, EAST COAST FEVER, lapinized RINDERPEST virus, helminthology, TB. and animal nutrition.

The proposed West African Veterinary Research Organisation is postponed owing to difficulties in obtaining qualified veterinary scientists.

FIJI AND BRITISH SOLOMON ISLANDS PROTECTORATE. Studies on the behaviour of dairy cows in a tropical environment and also climatic studies on identical twin heifers, the latter in conjunction with the Ruakura Animal Research Station, New Zealand, have been conducted at Segatoka.

JAMAICA. Tests of tick dip fluids, both improved arsenical dips and synthetic varieties, have been made.

Work on mineral deficiency conditions, particularly MANCHESTER WASTING DISEASE, continues.

NORTHERN RHODESIA. A F. & M. DISEASE vaccine produced in 1950 at Namwala is said to have reduced the susceptibility of local cattle from 50% to 2%. The work was to have been repeated in 1951. A RABIES vaccine was produced from 30% infected sheep brain in 10% phenol; 10,000 dogs were vaccinated.

Extensive tests of tuberculin revealed an excessive number of reactors with no lesions on P.M. examination.

In a long-range beef production experiment indigenous types have shown an advantage over imported breeds under normal ranching conditions.

TANGANYIKA. Research into the interaction of Kenya attenuated goat virus and bovine virus to throw light on the interference phenomenon was carried out. Tests have been made of the duration of immunity after the use of Mpwapwa inactivated tissue vaccine and further work has been done towards the evolution of an *in vitro* test for RINDERPEST virus and antibody.

TRINIDAD. After many years of trying to evolve a suitable cross for West Indian conditions by crossing European with Indian breeds (*Bos taurus-Bos indicus*), it has been decided to use Friesian-Holstein bulls on "Nelson type cows" and to breed half-bred cows with selected half-bred bulls.

UGANDA. The Serere zebu herd founded in 1939 now numbers 300 head. Under the conditions prevailing males reach maturity in 66 months and females in 42 months, *i.e.*, when the first calf is born. Calf weights increase up to the third calving after which they remain constant until the tenth calving, subsequent calves being much lighter. Milking records show an increase from 90 gal. per lactation up to 200 gal. over a period of eight years. Individual cows have up to 300 gal. in addition to feeding their calves. Production potentialities of zebu cattle in respect of milk and beef are primarily

dependent on management practice, especially feeding and watering. Supplementary feeding of digestible carbohydrate in particular has improved milk yields.—J. A. GRIFFITHS.

ANON. (1951). **Tsetse Fly and Trypanosomiasis Committee Report for 1950-1951.**—*Colonial Research* 1950-1951. pp. 207-220. [London: H.M. Stat. Off. 6s. 6d.] **1926**

It has been shown that epidemics of sleeping sickness were primarily precipitated by the dispersal of infected individuals resulting from changing living conditions. There was no evidence that alteration in the prevalence or distribution of insect vectors played any appreciable part. This indicated a need for elucidation of such problems as the true extent of losses amongst domestic stock, how the infections are acquired, the danger zones, the movements of stock in relation to tsetse and the conditions under which settled stock is maintained. Dr. H. E. Hornby, O.B.E., has visited Eastern Africa and has made a comprehensive survey of the problem in Northern Rhodesia, Nyasaland, Tanganyika, Kenya and Uganda. His report is to be published.

The Permanent Inter-African Bureau for Tsetse and Trypanosomiasis (Leopoldville, Belgian Congo) has prepared a bibliography of tsetse and trypanosomiasis.—BERYL A. KAY.

BECHUANALAND PROTECTORATE. (1951). **Annual Report of the Veterinary Department for the year 1950.** [DAWE, E. C. S.] pp. 16. Mafeking: Office of Director of Veterinary Services. **1927**

As over a million cattle are distributed over 275,000 sq. miles the slender veterinary staff works under peculiar difficulties. More than 90% of the stock is owned by Africans—many of whom live long distances from their animals—thus making disease control more difficult.

The main diseases mentioned are: ANTHRAX, dealt with by inoculation, but owing to the outbreak of F. & M. DISEASE in the territory, only about 52% of the cattle could be vaccinated. CONTAGIOUS ABORTION was widespread, but BLACKLEG occured only sporadically. Treatment for TRYPANOSOMIASIS was carried out on 420 cattle and an additional 11,629 were inoculated with dimidium bromide prior to export.

An outbreak of F. & M. DISEASE was responsible for the major work of the Department. The Territory's veterinary staff was assisted by members of the veterinary and lay staffs of the Union of South Africa and Southern Rhodesia, and Northern Rhodesian officials assisted in the inspection of cattle for export. The outbreak was successfully controlled by veterinary police measures. RABIES was encountered and was dealt with by muzzling orders and by the destruction of 173 dogs and 119 cats. A total of 166,278 sheep were dipped against SHEEP SCAB.

Over and above the diseases dealt with, supervision of livestock export was one of the major duties of the Department.

—D. S. RABAGLIATI.

NYASALAND PROTECTORATE. (1951). **Annual report of the Department of Veterinary Services for the year ended 31st December, 1950.** [MACPHERSON, D. F.] pp. 16. Zomba, Nyasaland: Govt. Printer. [Fcp.] **1928**

Shortage of European staff still limits the Department's efforts in research on disease. The Veterinary Staff consists of eight and there are two vacancies.

The total cattle population is 264,075, sheep 38,783, goats 259,858, pigs 52,548 and poultry 1,560,242. There are only 65 horses and 143 donkeys.

There were no serious outbreaks of disease in 1950 although RABIES has been a constant danger. The diseases occurring are BLACKLEG, WHITE SCOUR in calves, paratyphoid in young animals characterized by acute diarrhoea, TB., TRYPANOSOMIASIS (believed to be caused by *T. congolense* and *T. vivax*), EAST COAST FEVER, PIROPLASMOSIS, ANAPLASMOSIS and HEARTWATER due to *Rickettsia ruminantium*.

Of virus diseases RABIES caused the most concern, a total of 21 cases being reported, a reduction on the previous year's figures. For the first time in the Protectorate the immunization of dogs with vaccine from the Pasteur Institute, Algiers, was practised, 157 dogs in the Southern and 57 in the Central provinces being vaccinated. The vaccine has a high reputation and while immunity may not be 100% it is an important measure in RABIES control.

RINDERPEST caused little trouble, but the efforts of the Tanganyika Veterinary Department to hold the disease north of the Central Railway cannot be too fully appreciated in Nyasaland.

Spraying cattle with the newer D.D.T. B.H.C. preparations has been successful.

—D. S. RABAGLIATI.

TRINIDAD AND TOBAGO. (1949). **Administration report of the Director of Agriculture for the year 1949.** [LEACH, E. W.] pp. 31. [Items of veterinary interest pp. 17-22.] Trinidad and Tobago: Govt. Printer. 48c. **1929**

One outbreak of SWINE FEVER was the

only scheduled disease confirmed during the year.

A scheme for eradicating BOVINE TB. is being pursued, but the incidence of this disease in buffaloes is 26·4% and this complicates the problem.

Because of the high cost of the newer organic insecticides, it is concluded that there is at present no economic substitute for arsenical dips.—G. B. S. HEATH.

HONG KONG. (1950). **Annual report by the chairman of the Urban Council and head of the Sanitary Department for the year ended 31st March 1950.** [FEHILY, J. P.] pp. 44. Hong Kong: Noronha & Co. Ltd. Govt. Printers. [Contains Report of Govt. Veterinary Officer, J. C. Rix, pp. 22-27.] **1930**

Inoculation of all cattle and buffaloes in the Colony with lapinised RINDERPEST virus was completed during the year. SWINE FEVER causes heavy losses, but preventive inoculation with crystal violet vaccine has given promising results.

Forty-three cases of RABIES were confirmed, forty-one of these being dogs in the observation kennels. Annual inoculation of all dogs against RABIES is now compulsory. NEWCASTLE DISEASE caused heavy losses, but was brought under control with the help of vaccine from Manilla.

174 Ayrshire and Friesian cattle were imported into the Colony during the period under review.—T. LEACH.

SWEDEN. (1949). Det civila veterinärväsendet år 1948. **[Annual report of the State Veterinary Department, Sweden, for 1948.]** pp. 35. Stockholm: Kungl. Boktryckeriet. **1931**

Some details of the government organization of veterinary affairs, and a list of the statutes enacted in 1948 were given. Statistical information was given of the type of work done by the 669 registered veterinary surgeons at the end of 1948. The County veterinary surgeons gave fairly detailed accounts of the severity and incidence of metabolic disorders, infectious diseases (non-notifiable) and parasitic diseases and discussed the state of hygiene and management on the farms. Of the notifiable diseases 30 cases of ANTHRAX were reported, three in horses, 26 in cattle and one in a mink; in Norrbotten 152 cases of EQUINE INFECTIOUS ANAEMIA were diagnosed, 17 in the abattoir and the rest by laboratory study of biopsy liver samples taken by the practitioner (the disease also occurs to a slight extent in other districts); two outbreaks of FOWL-PEST-LIKE DISEASE were notified; (the state laboratories say that this condition should be called FOWL PEST); reliable estimation of the number of cases of FOWL TYPHOID had not been possible; 1080 cases of PULMONARY TB., 29 of UDDER TB. and 56 cases of TB. OF THE GENITAL ORGANS were slaughtered (there wer also 24 cases of UDDER TB. diagnosed in the course of normal meat inspection); a total of 1718 *Brucella abortus* infected cattle were slaughtered and the number of farms in which BRUCELLOSIS remained was calculated as 5,886 or 1·6% of the farms in Sweden. Quarantine and meat and milk control were discussed.

—H. BOYD.

U.S.A. (1950.) **State of California. Department of Agriculture. [Report of] Division of Animal Industry.**—*Bull. Dep. Agric. Calif.* 39, 319-350. **1932**

CARR, A. K. reported on the Division of Animal Industry.

In co-operative tuberculin testing of 848,455 cattle by Federal and State veterinary staff there were just under 0·33% reactors. Tests by practitioners and county livestock inspectors on 73,455 cattle revealed 0·39% reactors; there were no reactors among 1,624 goats and 52 pigs.

The principal emphasis in eradication work is placed on herds known to be infected.

259,461 calves were vaccinated against BRUCELLOSIS between six and nine months of age. Most of the work is done by practitioners on contract at 75 cents per calf, this vaccination being free to the owner.

Other diseases mentioned VESICULAR EXANTHEMA OF PIGS, JOHNE'S DISEASE, EQUINE ENCEPHALOMYELITIS, and CYSTICERCUS BOVIS infestation.

The Animal Pathology Laboratory at Sacramento, the Livestock Poultry Laboratories at Petaluma and San Gabriel, and also Turlock carry out the diagnostic laboratory investigations on material sent in by the field veterinary staff. Details are summarized of the common diseases of livestock and poultry diagnosed.

BOYD, G. A. reported on the Bureau of Meat Inspection.

Animals slaughtered under Federal, State or Municipal meat inspection control were 1,482,325 cattle, 463,298 calves, 1,736,284 sheep, and 2,061,277 pigs.

Animals condemned at abattoirs were 4,465 cattle, 5,188 calves, 9,381 sheep and 6,569 pigs.

The main causes of condemnation were SEPTICAEMIA and PYAEMIA, BRUCELLOSIS, PNEUMONIA and PLEURISY, TUMOURS and METRITIS.

—J. A. GRIFFITHS.

U.S.A. (1951). **Report of the Los Angeles County Livestock Department, 1950-1951.**

[WICKTOR, C. E.] pp. 50. [Mimeographed.] 1933

Efforts are being made to eradicate TB. in cattle, all cattle entering the county must now be subjected to a tuberculin test. BOVINE LEPTOSPIROSIS has appeared, and is causing much concern.

SWINE FEVER continues to be the major disease of swine, but vaccination is highly successful.—G. B. S. HEATH.

BOOK REVIEWS

MACLENNAN, J. D. [M.B.E.] (1951). **Recent advances in bacteriology (Dible).** pp. vii + 325. London: J. & A. Churchill Ltd. 3rd. Edit. 25s. 1934

The second edition of this book appeared in 1932. This third edition was begun in 1939 and has only just been published. The contents are entirely different from those of previous editions. Viruses are not dealt with and the emphasis is on bacterial physiology, biochemistry, and classification.

The first three chapters deal with the morphology, physiology and nutrition of bacteria. There follow four chapters on diseases of man caused by anaerobic bacteria and one on the Enterobacteriaceae. One chapter is devoted to chemotherapy and the last two chapters, contributed by Barber, deal with antibiotics.

The first chapter contains some fine electron photomicrographs supplied by the Society of American Bacteriologists. Each chapter is liberally supplied with references. The preface mentions "the extremely formidable task of checking the 17,000 odd references", but the reviewer has managed to find only about 1,700 of them; perhaps an extra nought has crept in!

No bacteriologist will allow this book to be out of his reach. Not only does it give an excellent review of current knowledge but it also gives the views on controversial subjects of its author, MacLennan, who since he first began the task of revision has become Research Associate in the Department of Surgery in Columbia University and has made full use of the facilities available in the U.S.A. for presenting the most modern views on a number of special aspects of bacteriology.

Like the other books in the "Recent Advances" series this book is clearly written, well documented and excellently produced. Veterinary bacteriologists will find much of value in it although it makes no attempt to deal specially with organisms causing diseases in animals. The first three chapters will be of particular interest and value.—E. G. WHITE.

LEDERBERG, J. [Selected by.] (1951). **Papers in microbial genetics, bacteria and bacterial viruses.** pp. xx + 303. Madison, Wis.: University of Wisconsin Press. 1935

This publication consists of an introduction by the selector and a series of twenty published papers dealing with the genetics of bacteria and viruses, reprinted from the original journals by courtesy of the publishers. Apart from the bibliography attached to each paper, there is also an alphabetical list of 142 references at the end of the book.

The selector's object is to provide university students specializing in bacteriology with a selection of original articles on microbial genetics which they might otherwise be unable as a class to read. The articles reprinted were published during the previous fifteen years, mainly in the U.S.A., but also in Great Britain, Canada and Australia. The authors, in addition to the selector, include S. E. Lea, H. B. Newcombe, P. R. Edwards, F. M. Burnet and C. F. Robinow. The subjects include mutations in *Bact. coli* and *Salmonella*, bacterial resistance to antibiotics, transformation of pneumococcal types, and genetic recombinations between bacteriophages

The series of papers, introduced and classified in a short preface, forms an introduction to the genetics of bacteria and viruses which the selector hopes will serve "to supplement a lecture course on microbial genetics . . ." it is likely that many besides university students will profit from reading the book, which might be entitled "Selected Readings in Microbial Genetics".—E. G. WHITE.

GOODEY, T. [Head of the Nematology Department, Rothamsted Experimental Station, Harpenden, Herts.] (1951). **Soil and freshwater nematodes. A monograph.** pp. xxvi + 389. London: Methuen & Co. Ltd. New York: John Wiley & Sons, Inc. 45s. 1936

At first sight it might be thought that this book, concerned with the free-living nematodes of soil, humus, decaying plant tissues, fresh water and, sometimes, in special association with insects, would have little interest for the veterinary helminthologist.

There are, however, occasions when the presence of free-living nematodes might give rise to error as, for example, in studies of the larval stages of parasitic nematodes during that stage of their life cycle when they are found on herbage or in the soil. Some of the parasitic nematodes pass a stage of their life cycle in

flies, *e.g.* the *Habronema* spp. or in earthworms, *e.g.* some of the lungworms. Occasions may therefore arise when it is necessary to recognise some of the free-living species to avoid confusion. This book will serve that purpose excellently.

A concise description and a clear illustration of each genus is given.

In addition to purely morphological matters information on bionomics is presented.

The fact that certain soil nematodes are now known to be carnivores which normally feed on other nematodes is of great interest in view of their possible importance in biological control of some of the parasitic forms.—M.C.

EDSALL, J. T. [Edited by.] (1951). **Enzymes and enzyme systems. Their state in nature.** pp. xiii + 146. Cambridge, Mass.: Harvard University Press. $ 2.75. **1937**

A symposium on "The state in nature of proteins and protein enzymes" resulted in the production in book form of six contributions from workers in different laboratories on their recent findings in this field. The contributions are:—(1) The organized respiratory activity of isolated rat-liver mitochondria by A. L. Lehninger; (2) The cyclophorase system by David E. Green; (3) Aspects of the specificity and mode of action of some peptidases by Emil L. Smith; (4) The reactions of horseradish peroxidase with various hemins by Andreas C. Maehly; (5) The reactions of ferrocytochrome-c with peroxidases and peroxides by Britton Chance; (6) The state in nature of proteins and protein enzymes of blood and liver by Edwin J. Cohn *et al.*

Each contribution has a list of references at the end and there is an index. The developments in this field in certain American and Swedish laboratories are recorded.—E.M.J.

CASSIDY, H. G. & WEISSBERGER, A. [Edited by.] (1951). **Technique of organic chemistry. Vol. V. Adsorption and Chromatography.** pp. xix + 360. New York & London: Interscience Publishers. $ 7.00. **1938**

This volume, V, in a series of VIII, devoted to the presentation of techniques used in organic chemistry for the synthesis, isolation and purification of compounds and physical methods for the determination of their properties, deals with various methods by which adsorption may be utilized as a tool for the separation of mixtures. The nature of adsorption and the phenomena associated with it are described in chapters I and II. Some of the literature on adsorption and adsorbability is discussed in chapters III, IV and V, and adsorption-separation problems are considered from the chemical and physical properties of phases, interfaces and adsorptives while chapter VI discusses analogies with other separation processes. Chapters VII, VIII, IX and X describe and explain the various types of adsorption methods. The last chapter, XI, gives a few experiments illustrative of various techniques. Chromatography, ion exchange-adsorption, partition chromatography etc. are discusssed. Parts of the book have been used in a graduate course in methods taught by the author during the last ten years. It is illustrated by diagrams and tables; there are author and subject indexes and cumulative indexes, volumes I-V. The book is of interest to organic chemists and biochemists, including those working in veterinary or medical laboratories.

—E.M.J.

LEAHY, J. R. & BARROW, P. (1951). **Restraint of animals.** pp. xii + 235. Ithaca, N.Y.: Leahy & Barrow. **1939**

This is an excellent little book which gives in handy form a good account of methods of restraint and of casting of animals. The line drawings tell the tale without much need of the supporting text; for example in dealing with ropes, the necessary knotting and splicing are clearly shown, so that all the required rope work leading up to prepared casting harness is described.

Every veterinary student and practitioner will want this book for study and reference. The size and the ring spine binding make it handy for the pocket.—J. EDWARDS.

SHOCK, N. W. [Edited by.] (1951). **Problems of aging. Transactions of the thirteenth Conference February 5-6, 1951, New York, N.Y.** pp. 194. New York: Josiah Macy, Jr. Foundation. $. 4.00. **1940**

Much of this book is taken up by *verbatim* reports of discussion at the Josiah Macy, Jr. Foundation, New York, of such matters as the raising of funds for a second International Congress on Gerontology and other affairs of little interest to those outside the small circle of members of the Conference. There are *verbatim* reports of accounts of original investigations on several aspects of aging: endocrine aspects by E. T. Engle, cardiovascular aspects by J. M. Steele, the integument by E. V. Cowdry and the biology of cell division by W. Jacobson of the Strangeways Research Laboratory, Cambridge.—E. G. WHITE.

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